DEPARTMENT OF THE INTERIOR
FRANKLIN K. LANE, Secretary

UNITED STATES GEOLOGICAL SURVEY
GEORGE OTIS SMITH, Director

WATER-SUPPLY PAPER 415

SURFACE WATERS OF MASSACHUSETTS

BY

C. H. PIERCE AND H. J. DEAN

Prepared in cooperation with
THE COMMONWEALTH OF MASSACHUSETTS

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By C. H. Pierce and H. J. Dean.

INTRODUCTION.

By Nathan C. Grover.

The water resources of Massachusetts have at all times played an important part in the industrial and commercial development of the Commonwealth. In the settlement and growth of the English colonies the rivers served as the principal lines of communication and commerce, as sources of power for small industrial uses in the grinding of grain to make flour and meal, in the carding of wool and in the manufacture of lumber, and as the medium for transporting logs from the forests to the mills. Thus, these valuable resources were utilized and hundreds of small water-power plants contributed to the growth of the Massachusetts colonies and to the needs and welfare of the colonists who were far removed from the world's markets of those times and were therefore largely dependent on local products, not only for their food, building material, fuel, and clothing, but for practically everything needed on their farms and in their homes. Small industrial communities were established and towns grew up in the vicinity of the developed water powers.

The uses to which the water powers have been put have changed with changing commercial conditions and the needs of a growing and prosperous commonwealth. The heavy forests have disappeared and only Connecticut and Merrimack rivers still carry logs from the distant forests in New Hampshire and Vermont. Flour and meal are now manufactured in relatively large local plants or in the still larger plants of the West, and the need for the small neighborhood gristmill has disappeared. The sawmills, gristmills, and wool-carding mills have been replaced by the machine shop, the paper mill, the cotton mill, and the variety of manufacturing plants for which Massachusetts has justly become noted. The small industrial towns of colonial and early commonwealth times have grown to be the important manufacturing and commercial centers of to-day. Lawrence, Lowell, Holyoke, and scores of smaller cities still depend

on water power as the principal source of energy, although steam plants have been constructed to supplement the power obtained from the rivers. The new conditions have also brought forth new uses. Water is needed in the industries that have been developed and in the towns and cities that have been built.

With improvements in electric transmission of power it is no longer necessary to use the power at the place of its generation. The power developed on Connecticut River near Brattleboro, Vt., and on Deerfield River in Massachusetts and Vermont is now being utilized to supplement the steam and water power in many cities and towns of the Commonwealth, and many small hydroelectric plants supply nearby cities and towns with power. The development of other power sites in Massachusetts and of more distant sites of great capacity in Maine and New Hampshire for transmission to the manufacturing cities of Massachusetts has been proposed.

Recent years have seen still another important change in the use of power. The electric light and the electric railroad have revolutionized the lighting of the home and transportation in the cities and towns. Electric heating and electric cooking in the home are still largely in the future. The interest of the people in the power resources of the State and community, great as it was in colonial times, is still greater and more intimate to-day. This fact is recognized in the large measure of control of the public utilities exercised by the Commonwealth and by municipalities. As Director Smith has stated,[1] "The most notable sign of the times is in the general acceptance of the principle of public control." The use of rivers as sources of public water supplies for cities and towns and the necessity for conserving the supply and protecting the quality in order that the individual may have at all times sufficient potable water bring forcefully to the attention still another phase of the water resources that is of immediate interest to all the people.

The construction of a water-supply system for the metropolitan district including Boston and the near-by cities is reckoned among the engineering triumphs of modern times. The protection afforded to the municipal water supplies by the Massachusetts Board of Health has served as a model for other States.

The various uses of the surface waters have from colonial times been considered of public benefit and therefore of interest to all the people. Many uses have been declared to be public uses and placed under public control, in accordance with the tendency of the present times. In January, 1916, the United States Supreme Court rendered a decision which defined "public use" in the following words:

[1] Smith, G. O., The people's interest in water-power resources: U. S. Geol. Survey Water-Supply Paper 400, p. 4, 1916.

But to gather the streams from waste and to draw from them energy, labor without brains, and so to save mankind from toil that it can be spared, is to supply what, next to intellect, is the very foundation of all our achievements and all our welfare. If that purpose is not public we should be at a loss to say what is.[1]

The interest of the people is therefore increasing. Uses are changing with demands, the higher uses are gradually superseding the lower uses in accordance with economic law. As these changes take place a knowledge of the quantity of water in the streams and of the variations from season to season and year to year is necessary.

This compilation of available stream-flow data has been made, therefore, to satisfy in part this need and to serve as a handy record of data now available and as a basis for future studies of this valuable resource and its uses. The report includes the classic records collected on the Merrimack at Lowell and Lawrence, on the Connecticut at Holyoke, and on the Cochituate and Sudbury by the Metropolitan Water and Sewerage Board, as well as records covering shorter periods. All have been studied in the light of the best available information and revised where necessary and possible, and they are presented for the use of the people of Massachusetts.

COOPERATION.

Under authority conferred by Federal and State legislation, the Director of the United States Geological Survey and the governor of the Commonwealth of Massachusetts entered into a cooperative agreement in 1909 for an investigation of the water resources of the State. This cooperation was renewed in 1911, and again in 1912, when it was provided that the sum of $3,000 should be set aside for this purpose each year by each of the cooperating parties for a period of five years. The governors of the Commonwealth have represented Massachusetts throughout the different periods of cooperation. Assistance in obtaining stream-flow records has also been rendered by several power companies. Where the entire record has been furnished by private parties the fact has been acknowledged in connection with the description of the station.

DIVISION OF WORK.

The investigations were begun under the direction of F. H. Newell, chief hydrographer, by N. C. Grover, district hydrographer, and were supervised from 1904 to 1909 by H. K. Barrows, for a few weeks in 1910 by T. W. Norcross, from 1910 to 1914 by C. C. Covert, and subsequent to 1914 by C. H. Pierce. Many assistants have participated in the field work and their names appear in connection with discharge measurements listed in this report. The ratings, computations, estimates of flow during winter periods, and special

[1] U. S. Supreme Court, No. 200, Jan. 24, 1916, Mt. Vernon-Woodberry Cotton Duck Co. et al. *vs*. Alabama Interstate Power Co.

studies for this report have been made by C. H. Pierce, district engineer, and H. J. Dean, assistant engineer. Hardin Thweatt, junior engineer, W. A. Elwood, clerk, and G. F. Adams, field assistant, assisted with the computations. The manuscript was prepared by H. J. Dean.

TOPOGRAPHY.

By Arthur Keith.

PRINCIPAL FEATURES.

A bird's-eye view of Massachusetts would reveal three belts of high ground and four of lowland trending southward across the State. In general each lowland belt is lower than the one next west of it, and each slopes southward with the streams. Likewise each intervening belt of high ground descends as a whole toward the south and each in turn is lower than the belts at the west. The sum of these features is that the highest part of the State is in the northwest corner and the lowest is in the southeast.

The State is drained by two great rivers, the Connecticut and the Merrimack, and by many smaller ones. As a whole the direction of stream flow in the State is decidedly southward, and no stream crosses any of the uplands.

Connecticut River enters the State from the north and flows southward directly through it, cutting off its western quarter. The river flows nearly midway between the borders of its basin, which includes about one-third of the State. In Massachusetts the river has two main branches on the west, Deerfield and Westfield rivers, and two on the east, Millers and Chicopee rivers.

Merrimack River also enters Massachusetts from the north but within 6 miles turns northeastward and empties into the Atlantic Ocean near the northeast corner of the State. Nashua and Concord rivers, its principal tributaries, are nearly as large as the branches of Connecticut River. They flow northeastward and, with the Merrimack, are the largest exceptions to the general trend.

The Charles and Ipswich, somewhat smaller rivers, also flow northeastward into the sea. Taunton River and its branches have general southerly directions and empty into Narragansett Bay. The area along the western border of the State is drained by Housatonic River, which flows southward parallel to the Connecticut, and by Hoosic River, which has a general westward course to the Hudson. Quinebaug and Blackstone rivers drain the south-central marginal part of the State, the former flowing southward to Long Island Sound and the latter into Narragansett Bay.

There are three main divides between the different river systems of the State. One runs southward nearly through the State and divides it roughly into halves. Another, parallel to this, crosses the State 10

to 15 miles from its west boundary. Between these divides lies the Connecticut River basin. The third main watershed, which cuts the eastern half of the State into nearly equal parts, has an average westerly course from the sea to the Connecticut Valley. This divide parts the streams that flow directly into Long Island Sound from those that enter Connecticut River and those that flow northeastward into the Atlantic. These watersheds are remnants of the original divides and are some of the oldest physical features of the State.

Each highland or upland is due to the prevalence in it of rocks that are hard and resist the wear of streams and weather, and in contrast each lowland is due mainly to the presence of rocks that are weak and yield most readily to the elements. These leveling processes, continuing through the geologic ages, have carried to the sea the tops of the great blocks and the folds into which the rocks have been forced from time to time. Thus the mountains and hills of to-day are but the roots of those of the geologic past. During numerous epochs the reduction of the highlands was carried so far that broad tracts were worn down nearly to a plain. Later uplifts of the land steepened the slopes, so that the streams with renewed speed and power cut down their beds and broadened their valleys into new plains. Thus each plain was raised in turn to a plateau, which was then cut down in whole or in part to the younger plains. The remnants of the older plateaus are still to be seen at various levels as high as 2,200 feet.

Plateau surfaces are characteristic of the State; several of them are plainly seen in each upland, and a similar succession of surfaces appears in the eastern lowland. They are arranged like giant platforms or stairs climbing toward the west; each step is cut deep into the mass of the next above, and over great areas no trace is left of the older steps. The most complete series of the higher surfaces is preserved in the western highlands, and that of the lower surfaces in the eastern lowland.

The deeper rocks of the earth's crust are crystalline; that is, they are composed of mineral crystals knit firmly together. The higher rocks are sedimentary; that is, they are made up of the worn and sorted particles of the deeper rocks into which the surface has from time to time been worn down. As a class the sedimentary rocks, such as limestone, shale, or sandstone, are less firm than the deeper crystalline rocks, like granite, gneiss, or schist, and so have been cut down more deeply. Thus the lowland belts have resulted directly from the faster wear on the weak limestones, shales, slates, and sandstones. The present distribution of these rocks is due largely to the manner in which they have been folded or broken by the earth's forces.

Four grand belts of depressed rocks or basins, corresponding roughly to several areas of sedimentary rocks, were formed, and

between them were raised three masses or huge arches of deep-lying crystalline and igneous rocks. Although each arch differs from the other arches and each basin from its fellows, they have this controlling feature in common—that each arch exposes crystalline rocks that are harder and older than those of the adjoining basins, whereas each basin contains sedimentary rocks that are younger and softer than those of the arches on its flanks. The coastal plain contains only gravel, sand, and clay, and is the lowest division of the State.

To sum up these facts, each upland belt stands up because it contains relatively hard rocks like granite, gneiss, or schist, and these were uplifted from the depths of the earth's crust in rude, enormous arches; each lowland belt is worn down on weaker rocks like limestone, shale, or sandstone, which were depressed in deep basins or sunken blocks of the crust. After the various foldings were completed the surface was worn down almost to a plain. Then the whole region was lifted again and again by hundreds of feet, the streams began their wear anew, and lower plains were formed between the remnants of the old ones. Thus the huge overtopping masses of the ancient folds were worn to the roots, and the series of plains became the great plateaus of to-day.

Then came the invasion of glaciers from the far North. Beneath these vast ice sheets the highest mountains in the State were buried, the rocks were smoothed and ground off, and their fragments were carried to great distances. In places the valleys were somewhat deepened; in places they were filled with waste rock. Finally the great ice mass melted away and left a blanket of bowlders, sand, and clay called the glacial drift. This filled the valleys, blocked or diverted the streams, and formed new ridges and hills that are prominent features in the lowlands. Cape Cod, the most prominent feature of the New England coast, owes its very existence to the mass of drift deposited around the end of one lobe of the glacier. Another lobe produced the high ground and the islands that outline Buzzards Bay on the southeast. The principal features of Marthas Vineyard and Nantucket resulted from an earlier and farther advance of these glacial lobes.

The land rose, when freed of its great load of ice, and the streams began to cut into their new channels. As the channels deepened, high parts of the bedrock were uncovered and resisted the wear of the streams so as to stand above the sands and clays, forming waterfalls and rapids. These were destined to provide the locations of the early mills and thus to lay the foundations for the manufacturing eminence of the State.

The latest geologic episode, the slow sinking of the land, has had a marked influence on the geography and industries of the State. The deep river valleys were first submerged and became the great inlets

of Boston, Buzzards, and Narragansett bays. Lesser valleys formed deep, rock-bound harbors, as in Gloucester and Salem, or shallow, sand-rimmed inlets, like Plymouth and Duxbury harbors, or other important harbors, like Fall River and New Bedford. The beat of the sea waves on the new coast fast cut away the sand and clay and spread them offshore into long, slim bars and beaches, which now nearly inclose and protect deep harbors, like those of Boston, Provincetown, and Newburyport, and scores of shoaler ones, as in Duxbury and Chatham. The shallow harbors are very numerous north of Cape Ann and south of Cohasset. The existence of these numerous harbors stimulated the early pursuits of fishing, trading, and ship building and did much to render the State prominent in commerce.

As the sand bars reached out across the inlets, the latter fast filled up with swamp and marsh deposits. The greatest of these marshes extends 23 miles along the coast from Essex, Mass., to North Hampton, N. H.

The relative rise of the sea level has also increased somewhat the navigable parts of the rivers. Taunton and Merrimack rivers are the largest examples of this increase, but even small streams like Charles and Mystic rivers, which are navigable for ocean-going vessels for a few miles, are important in their added water front for commerce. One of the great shipbuilding yards of America is 4 miles from deep water on Weymouth Fore River, a small tidal stream. Except for the tidal rivers, the only stream in the State that is navigable by seagoing vessels is the Merrimack, which is used by small craft up to Haverhill, 15 miles from its mouth.

A notable part of the water of the State is found in the ponds and lakes, and few other States are so well supplied. The ponds fill hollows formed by the glacial drift and range in size from bodies like Watuppa Pond, in Fall River, 7.7 miles long, down to tiny ponds covering less than an acre. They are most numerous on Cape Cod, but are abundant in the central upland and the eastern lowland. Taken as a whole the ponds tend to be longer in a north-south direction, in accord with the prevailing trends of the hills and valleys. Many of these lakes are partly filled and are used as cranberry marshes. A list of the lakes, ponds, and reservoirs more than 10 acres in area was published in an appendix to the report of the Massachusetts State Board of Health for 1873. The total number listed was 1,206, and the aggregate area 93,000 acres. In the gazetteer forming the appendix of this report many of the lakes named on the maps are described.

Seven topographic districts have been formed in the State as the result of the conditions above described. These districts, named in order from west to east, are (1) the Taconic Range, along the western border of the State; (2) the Housatonic Valley (including the Hoosic

Valley); (3) the Green Mountain highlands (including the Berkshire Hills); (4) the Connecticut Valley; (5) the central upland; (6) the eastern lowland; (7) the coastal plain.

TACONIC RANGE.

Only the eastern portion of the Taconic Range comes into the State, most of it being in New York and Vermont. Its highest summits are along its eastern margin, and Mount Greylock, 3,505 feet, the highest peak in Massachusetts, stands in its northern part. Other high peaks on the range west of Greylock are East Mountain, 2,660 feet, and Berlin Mountain, 2,804 feet. Toward the south the altitudes are in general less, and Mount Everett, near the southwest corner of the State, stands at 2,624 feet, nearly 1,000 feet lower than Mount Greylock. The main watershed of the range in Massachusetts follows its high eastern part from Greylock to the southwest corner of the State and divides the Hudson waters from those of Housatonic and Hoosic rivers.

There are many lesser mountains and ridges in the Taconic Range, and they are separated by numerous deep lengthwise valleys and by cross gaps or passes. The summits at the north are more even than those at the south, but there is throughout the range a noticeable development of single peaks. The northern ridges have a general north-south trend and tend to be parallel, but these features are less marked toward the south. There is more variety in the summit heights of this range than in those of the other upland districts, but the high plateaus seen in the Green Mountain highlands are imperfectly shown here, especially in the southern part of the range in Mount Washington. The most prominent feature of the range is its steep escarpment on the east, where it towers above the Housatonic Valley. Its western parts descend rather steadily and pass into the lowlands of the Hudson Valley in New York. The general steepness of the slopes causes a very rapid run-off of the waters.

The part of the Taconic Range in Massachusetts is carved almost wholly from slates and schists, and to the superior hardness of these rocks is due its prominence above the limestones of the Housatonic Valley. The schists are harder than the slates and lie at the east, causing the greater heights of the eastern parts of the range.

The Taconic Range is steep and rugged in Massachusetts, and its upper parts are poorly adapted to settlement. The passes from east to west and the deep lengthwise valleys have, however, made traffic through the range much easier than in the Berkshires. The early farming communities settled towns in the valleys, and these sites were confirmed by the later development of manufacturing near the water powers and railroads.

HOUSATONIC VALLEY.

East of the Taconic Range lie the valleys of Housatonic River, which flows southward to Long Island Sound, and of Hoosic River, which flows northward and westward to the Hudson. Hoosic River leaves the State at an altitude of about 570 feet, and Housatonic River at 650 feet. The valley at the head of the two rivers is 1,120 feet above the sea, and most of the valley floor lies between 700 and 900 feet. The rivers are in few places much below the valley floors, but locally, as at Glendale, they pass through narrows and gaps in ridges. These valleys were worn down along the soft marbles and limestones and followed these beds into all their projections wherever they were folded into the hard rocks, thus forming deep bays in the uplands. To this is due the much indented outline of the Housatonic Valley, so markedly shown near Stockbridge, Pittsfield, and North Adams. These forking valleys trend about northward or southward into the Taconic Range and southeastward into the Berkshires, following the general courses of the near-by slates and gneisses. Above the general valley bottom rise scattered ridges or islands of the harder schist, such as Lenox Mountain, 2,150 feet above the sea, and Tom Ball Mountain, 1,930 feet.

Most of the older plains have been removed from the valleys, and the floors on the soft rocks have kept pace with the down wear of the streams. There are, however, remnants of older and higher surfaces left in places least exposed to stream cutting, as is well shown around North Adams at an altitude of 1,140 feet, and around Pittsfield, Lenox, and Stockbridge at 1,050 to 1,100 feet. The Housatonic above Pittsfield is near the level of the older surface, but below Stockbridge it has formed a broader, younger, and lower valley with flat floors and scattered hills. The Hoosic has cut a narrow valley several hundred feet below the old plateau. In both valleys many minor irregularities were smoothed out by the deposits of sand and gravel that were laid down by the melting glaciers. These deposits formed extensive plains around Pittsfield and along the Housatonic below Great Barrington, and at some places produced hills and small ridges.

Housatonic and Hoosic valleys form a great natural thoroughfare through the highlands. Farming settlements grew up on their plains from the earliest times and were later strengthened by the growth of manufacturing. Mills were located on the water powers along the eastern border, where the streams emerge upon the plains from their canyons in the Green Mountain highlands. The railroads in later days found these valleys the obvious opening for traffic north and south. Where this valley thoroughfare intersects the lines through the main east-west passes of the highlands, the flourishing

cities of Pittsfield and North Adams have grown. From this channel has also spread the tide of summer travel that makes the scenery and climate of the region so great a natural asset.

GREEN MOUNTAIN HIGHLANDS.

General features.—Rising boldly above Housatonic Valley on the west and Connecticut Valley on the east are the Green Mountain plateaus, a belt of highlands about 25 miles wide, running southward across the State. Their northern part contains Hoosac Mountain, one of the most prominent heights in the State. This range is the south end of the Green Mountains of Vermont, and the highlands are the worn-down remnants of the earlier mountains. The western part of the highlands, in Berkshire County, is called the Berkshire Hills.

The area is drained mainly southeastward by Deerfield and Westfield rivers, tributaries to the Connecticut, and to a less extent by Farmington River and small branches of Housatonic and Hoosic rivers. The western half of the highlands is formed mainly from the ancient gneisses and granites, and the eastern half from later schists. The belt of ancient rocks widens greatly toward the south. The highlands owe their prominence to the hardness of the rocks beneath them, and the main divide and the higher mountains are at the west on the gneisses, the hardest of all.

These highlands have a distinct plateau aspect. The tops are broad and rounded and form rather even sky lines, and the streams have cut deep, narrow valleys or gorges many hundreds of feet below them. The segments into which the highland is cut have as a whole a marked southeasterly trend across the belt. The trend is northeasterly, however, in a narrow belt near Deerfield River. Just as the general outline of the highland area follows that of the crystalline rocks, so the drainage lines and ridges correspond very closely with the local trends of the rocks. This correspondence is especially notable in the area of gneisses, whose divisions contrast strongly in character. Exceptions to this rule are shown by the schist belts east of Hoosac Mountain and those in the extreme northeastern part of the highlands, where the ridges and valleys cross the rock belts.

About half the highland area is more than 1,500 feet above the sea, and much of the main watershed is higher than 2,000 feet. The main divide culminates in Hoosac Mountain, near the Vermont boundary, in a peak 2,800 feet high, and from this point the high ground falls away to the south and east. The main divide hugs the west border of the highlands and is usually within 5 miles of it. The summits of the highlands fall into three groups that are significant, with a vast number of others without system. Around the margin of the highlands one group stands 1,100 to 1,200 feet above the sea, the next

from 1,600 to 1,700 feet, and the highest from 2,050 to 2,200 feet. There is some evidence of another group at heights a little less than 1,400 feet.

As must be the case with any old and high plateau, these old surfaces are so deeply dissected that only remnants are left. These remnants are naturally to be found on the hardest rocks and near the divides, where the streams have the least power. Their summits fall into systems with sky lines so even that the plateau character is obvious to the eye, although the rivers run in huge trenches from 700 to 1,500 feet below the summit levels. The view of the plateaus and Deerfield gorge from the town of Florida is very fine.

The form of the highlands was little affected by the great glacial invasion. Minor irregularities of surface were smoothed out, and small deposits of gravel and clay were made. The chief result was the partial blocking of valleys and the consequent formation of lakes and ponds, but they are much less numerous here than in other parts of the State. The lakes have great beauty, and the part taken by them in the scenery is enhanced by the setting of wooded mountains. In fact, the scenic beauty of these highlands, with their rugged gorges, forest slopes, and crystal lakes, is justly famed.

The summits of the plateaus were so much better adapted to agriculture and travel that the old towns were laid out on the hills. Later the development of small water powers caused the location of manufacturing towns in the valleys. This process was emphasized by the advent of the railroads and their diversion of transportation and manufacture. These highlands oppose so effective a barrier to travel that there is in Massachusetts only one natural pass across them for a railroad. This is where Housatonic River heads against part of Westfield River at an elevation of 1,470 feet. Deerfield River cuts a deep gorge almost across the highlands, but its use by a railroad required a 4½-mile tunnel under Hoosac Mountain. This range was and still is a formidable obstacle, and its western scarp of 1,000 feet is the greatest in the State.

CONNECTICUT VALLEY.

The Connecticut Valley is roughly triangular and is about 4 miles wide at the north boundary of the State, and 20 miles wide at the south. To the observer on any high summit the valley appears practically flat in contrast with the highlands walling it on each side. It is drained entirely by Connecticut River, which flows southward in the center of the valley, with two main tributaries on each side, Chicopee and Millers rivers on the east and Deerfield and Westfield rivers on the west. The Connecticut enters the State at 180 feet above sea level and leaves it 63.5 miles downstream at an altitude of 80 feet. It has few falls, and between them are long stretches of slack

water suitable for navigation by small boats. Even its main tributaries, however, have high grades and numerous falls on the hard rocks of the highlands.

The valley is underlain mainly by soft red or brown shale and sandstone, interbedded with which are several lava flows. The sandstones and shales have offered little resistance to the wear of the streams, so that the areas underlain by them were reduced to a low rolling plain. The sheets of lava or trap, however, have proved very resistant and stand up in the long, sharp crescent of the Holyoke Range, with summits at 1,214 feet in Mount Tom and 1,115 feet in Mount Norwottock, that reach the level of the highlands east and west of the valley. The low, rolling hills around its margin locally form groups with heights of 500 to 650 feet and of 300 to 340 feet, but far the greater part of the valley is below 300 feet.

The shape of the valley follows closely the outline of the soft red beds, and this was produced mainly by faults along which the surrounding older rocks were raised, leaving the red beds at low levels. At the extreme north end of the valley, near Bernardston, some low ground is formed by weak slates around the margin of the red beds.

Evidences of lower plain surfaces that were probably developed have been concealed by the deposit of glacial drift, which is very thick. The lower inequalities were completely buried in the sand brought down by the Connecticut and its tributaries. The deltas of the side streams formed miles of level plain, fine examples of which are seen around Springfield and Greenfield. Only here and there has the river in cutting down through these sand deposits uncovered the preglacial rock floor. At these places, such as South Hadley, Turners Falls, and Millers Falls, the hard ledges have caused waterfalls and powers that have attracted factories and settlements around them. Agriculture and the early settlements depending on it were fostered by the fertile soil and the levelness of the valley, and at later dates the valley formed a natural avenue for railroad traffic. The main east-west traffic line through Chicopee and Westfield valleys intersects the north-south artery of the Connecticut at Springfield and makes one of the most important cities of the State. The combination of these elements has produced a high concentration of population which approaches that in the eastern part of the State.

CENTRAL UPLAND.

General features.—The central upland includes the high part of the State between the Connecticut Valley and the lowland of eastern Massachusetts. It crosses the State in a north-south belt 34 miles wide at the north but narrowed to 20 miles along the Connecticut

border. Its west border is the Connecticut Valley, and on the east it is limited along a nearly north-south line through Princeton. It extends only a short distance into Connecticut, but passes far into New Hampshire. The western front of this upland rises sharply 700 to 900 feet above the Connecticut Valley. The eastern margin is nearly as distinct and rises about 600 feet above the eastern lowland.

The main divide between the Connecticut and Atlantic drainage runs about south and is nowhere more than 6 miles from the eastern border of the upland. On it are situated the highest peaks. Almost all the area is drained into Connecticut River by its tributaries, Quaboag, Ware, Swift, and Millers rivers. The eastern part of the upland is drained northeastward through Concord and Nashua rivers into the Merrimack and southeastward through Blackstone River into Narragansett Bay. The area along the southern border is drained by Quinebaug River. The cross divides between the east-west streams are not symmetrical, each stream lying near the south side of its basin. Swift River, for instance, heads within 2 miles of the main channel of Millers River but flows southward for 25 miles into Chicopee River.

The upland consists mainly of high rounded hills and ridges separated by narrow valleys, and the evenness of summits characteristic of the plateau is clearly manifest from any high summit. Above the hills stand a few mountains such as Mount Wachusett, 2,022 feet; Watatic Mountain, 1,847 feet; and Mount Grace, 1,628 feet; all in the northern part of the upland. In general, the plateau is slightly lower toward the south, the summits at the north being about 1,200 feet above sea level and those at the south about 1,100 feet. This corresponds well with the descent of the master stream, the Connecticut, in the same direction. There is no general difference of plateau level from east to west, in spite of the facts that the main streams flow westward and that the divide is so near the east border of the plateau.

Included in this general upland area, in addition to the principal plateau, there are a marginal belt of much worn-down plateau remnants and also numerous large tracts reduced nearly to lower plateau levels. One group of such summits, about 900 feet in altitude, appears locally to form an obscure plateau along the east margin of the upland. The upland is due to the hardness of the granites, gneisses, and schists which underlie most of it, as contrasted with weaker rocks in the lowlands on each side.

The breadth and roundness of the summits of the upland are like those of the Berkshire Hills, but the valleys, although narrow like those of the Berkshires, are not so deep (only 200 to 700 feet), because the summits are lower, while the master stream is the same for each upland. Near the border of the Connecticut Valley the canyon-

like aspect of the stream is, however, as marked as in the Berkshires. There is a decided southerly trend to the ridges and smaller valleys, in spite of the fact that the main streams have a general westerly flow. This general trend is caused by the wear of the minor drainage lines northward or southward along the belts of weaker rocks. Although few of the ridges seem particularly long, owing to their blending in the view with the surrounding ridges of the plateau, many of them really extend for considerable distances. The one which runs through Shutesbury and Pelham near the Connecticut Valley is 20 miles long, and a large number of others are 8 or 10 miles in length.

Large irregular depressions were cut well across the plateau by Quinebaug, Quaboag, and Ware rivers, but only the areas close to the streams were reduced to any plateau level. There is also a major north-south valley running through Monson, Greenwich, and Orange, which is crossed by the main rivers and occupied by their tributaries. Numerous minor north-south valleys extend for long distances, although each may be occupied by several streams—for instance, the valley passing through Baldwinsville.

As in the Berkshire Hills, the early settlements in the central upland were agricultural, and many hill towns, like Petersham, Templeton, and Rutland, grew up on the rolling hill country away from the streams. With the increasing use of water power for manufacturing and the building of railroads through the valleys, manufacturing towns arose in them and far outstripped the hill towns. Millers River and Chicopee River with its branches, the Ware and Quaboag, formed the main passageways across the upland and were occupied by the east-west railroads. The north-south minor valleys, especially the Orange and Monson valley, were occupied by connecting railroads.

The form of the plateau was only slightly modified by glacial invasion. A thin sheet of bowlder clay was deposited over the plateau, and here and there areas were left bare and rocky. Sand deposits were formed in the valleys and filled some of them to considerable depths, but the main topographic lines were not obscured.

EASTERN LOWLAND.

General features.—The eastern lowland occupies about half of the area of the State. It is bounded on the east by the coastal plain which takes in the peninsula of Cape Cod and a narrow tract along Massachusetts Bay east of a line running through Onset, Kingston, and Scituate. Its western border is a belt of hilly country, from 2 to 4 miles wide, which lies west of Worcester and Fitchburg and forms the foothills of the central upland.

The larger bodies of high ground or ridges in the eastern lowland have distinct northeasterly courses, and the same trend is even more

plainly evident in the major valleys. This direction is in decided contrast with the southerly trend of the valleys and hills in the western half of the State. The hills are shorter and have less obvious trends than those of the upland. Nearly all of them are smooth and rounded and there are few conspicuous ledges, except in the Blue Hills and in a rocky belt running from Waltham to Gloucester. The valleys are broad and irregular and make up most of the area.

The eastern lowland has one principal divide which separates streams of very different kinds. This divide runs from Paxton, on the main central upland divide, east to Boylston, thence southeast to Wrentham, at the corner of Rhode Island, and north of east to the sea at Scituate. North of this divide the larger streams flow northeastward to the ocean, and south of it they flow southward into Narragansett and Buzzards bays. A minor exception to this rule is Blackstone River, which flows southeastward from Worcester through Woonsocket into Narragansett Bay. The general watershed above described follows the belt of high country which stands upon the hard granitic rocks and is a remnant of one of the oldest divides of the State. On it also is situated the most of the high hill country that forms a belt from Quincy to Wrentham and is underlain mainly by granite. This hill belt is paralleled on the south by the broad lowland that stretches over shales and sandstones northeast from Narragansett Bay nearly to Massachusetts Bay and by another hill belt that extends on granite and gneiss northeast from Fall River through Middleboro and nearly to the sea. These lowland and hill belts are cut off at the northeast by the morainic hills described under the heading "Coastal plain" (pp. 22–23). These belts are nearly paralleled on the north by the hill country that extends northeast from Weston through Salem to Cape Ann and by the ridge that reaches from Shrewsbury northeastward through Harvard. The latter is the southeast divide of the Nashua River basin and is held up by hard gneiss and schist. This basin, with its extension into Connecticut, is excavated in slates and allied rocks and forms one of the oldest valleys known in the State.

Almost without exception the northeastward-flowing streams of the lowland lie near the southeastern divides of their respective basins. Nashua River is a striking instance of this lack of symmetry, its main channel being in few places more than 3 miles from its southeastern divide, although its northwestern branches are from 15 to 25 miles long. Even the Charles, the most sinuous river in the State, follows this rule fairly well. Another peculiarity of most of these rivers, including the Charles, Sudbury, Ipswich, and Merrimack rivers, and Nashua River with its three branches, is that they all flow southeastward in their upper courses and turn sharply northeastward into their lower courses.

The summits of the lowland fall into four groups of plateau-like surfaces. These are successively lower toward the east, and each group forms deep bays projecting westward into the higher ones. As a whole, they are like immense steps or platforms ascending to the central upland. The highest group forms a north-south belt across the State next to the upland. It has a fairly uniform width of 6 to 15 miles, and its hilltops range between 540 and 650 feet in altitude. Far from this group but rising to its level are the Blue Hills of Quincy and Milton, 500 to 640 feet, and Moose Hill in Sharon, 560 feet.

The next group forms a very irregular belt of hills between 320 and 380 feet above the sea. These are to be seen mainly around the margins of the river valleys and in the two hill belts northeast of Wrentham and Weston. Next below them is a group of hills between 220 and 260 feet above the sea, which are scattered over much of the State east of the two higher groups and almost reach the sea in Lynn. On the hills of this group in Lynn and Waltham there is scarcely any glacial drift and rock ledges are very numerous. In this feature these hills are surpassed by no other part of the State except the extension of the same belt northeastward into the promontory of Cape Ann. Much of this rocky hill country is to-day a wilderness, although situated in one of the most thickly settled districts of the United States. The summits of the lowest group range between 110 and 160 feet, and their areas form an irregular network along the coast and up the river valleys. Probably half of the area of the lowland southeast of the Quincy and Wrentham hill belt falls into this group.

In general aspect the eastern lowland is more modified by glacial action than the more western parts of the State. The commonest glacial features are the sand plains which fill the valley bottoms and rim their slopes. The next in abundance are the drumlins or smooth, rounded hills of bowlder clay with bases resting on the bedrock. These are scattered over both the valleys and hills, but are more numerous on the lower levels of the lowland than elsewhere. They are usually not more than half a mile long, and their axes run generally from northwest to southeast, the direction in which the ice moved.

South of the latitude of the Blue Hills rock outcrops are very scarce and there is an almost continuous cover of glacial drift. Bedrock is exposed more commonly to the north and west of Boston in the hill belts and higher country, but the valleys are deeply filled with glacial sand and gravel. The promontories of the bedrock at the ocean in Cohasset, Manchester, Gloucester, and adjoining towns form bold rocky shores, whose picturesque scenery attracts thousands of summer visitors. North of Cohasset the shore line is followed by numerous salt marshes, the largest of which extends from Essex for 16

miles across the mouths of Ipswich, Parker, and Merrimack rivers into New Hampshire.

Other results of glacial action are the ponds and swamps so thickly scattered over the lowland. The ponds lie in all topographic situations from hills to valleys, though they are most numerous in the valleys. Most of them are held up by dams of glacial drift across hollows, but many, including the largest, occupy hollows left by blocks of glacial ice. The largest are Assawompsett Pond, in Lakeville, 5.3 miles long, and Watuppa Pond, in Fall River, 7.7 miles long. The swamps represent shallow ponds that have been filled up by peat or muck, like the great cedar swamps in West Bridgewater and Halifax, or else stretches of stream valley like those of Neponset and Sudbury rivers, where the grade is slight above a barrier of bowlder clay.

The lowland was most completely cut down in the area underlain by the slates. This comprises the lower Charles and Mystic valleys and the area of Boston Harbor as far south as Weymouth and Cohasset. Boston Harbor really consists of several small river valleys that have been submerged by a sinking of the land since their formation. This sinking seems to be still in progress, although exceedingly slow, and accounts for the inland growth of the salt marshes. Narragansett Bay had the same origin, and the valleys of the old Taunton and Blackstone rivers were submerged far inland by the settling of the land. A further sinking of 100 feet would make half of the southeastern part of the State an archipelago like the coast of Maine. The same settling of the land has separated the islands from the south shore and greatly extended Buzzards Bay. This bay occupies the depression of several small stream valleys bounded on the east by the moraine of Falmouth and the Elizabeth Islands. This sinking of the land has been of great economic importance to the State through the formation of its deep waterways, such as Boston, Narragansett, and Buzzards bays, and of the scores of small tidal inlets and rocky harbors like those of Gloucester and Marblehead.

The waterfalls of the eastern lowland are an indirect result of glacial action. After the ice melted the streams were here and there turned aside into new channels by the accumulations of sand and bowlder clay. As the land rose, when freed of its load of ice, the rivers began with fresh energy to cut down their channels. In places they encountered high parts of the buried bedrock; these held up the streams above them, while the stretches downstream, on the clays and sands, were readily excavated. Thus came into being the falls and rapids that have meant so much to the manufacturing industries of the State.

The falls of the Merrimack at Lowell, Lawrence, and Haverhill were the greatest and the earliest developed. Now this river is one of the most noted power streams in the world, and with its tribu-

taries it has more utilized power than any drainage basin of equal size in America. The early mill settlements, like Lowell and Lawrence, have developed into the greatest textile centers of the Western Hemisphere. This early advantage was increased for Lowell by its position at the great bend of the Merrimack, which is the chief outlet for the traffic of the entire river valley in New Hampshire.

The power of the several falls of Blackstone River is now highly developed. It induced the early industries of many towns, such as Worcester and Blackstone, also Woonsocket and Pawtucket, in Rhode Island, at the State border. Similar falls determined the location of Clinton and Fitchburg on the branches of Nashua River, Medway and Newton on Charles River, and Milton on Neponset River. Other large towns, such as Fall River and Taunton, on Taunton River, took early advantage of the waterfalls.

COASTAL PLAIN.

The coastal plain of Massachusetts includes Cape Cod, the southern islands, and a narrow tract along the coast east of a line through Onset, Kingston, Marshfield, and Scituate. The coastal plain has no hard rocks at the surface, like the rest of the State, but is underlain by clays and sands that are deeply covered by glacial deposits.

The most prominent feature of the New England coast is Cape Cod, which projects from the mainland east of Buzzards Bay, and roughly has the shape of a man's bent arm. It incloses the south end of Massachusetts Bay, and its southwest prong, with the Elizabeth Islands, forms one side of Buzzards Bay. Between its south shore and the islands of Marthas Vineyard and Nantucket lie the shoal waters of Nantucket and Vineyard sounds. The Cape and the shoals around it are the greatest obstruction and menace to shipping on the Atlantic coast. To obviate this the Cape Cod Canal has recently been dug across the cape east of Bourne, at the head of Buzzards Bay. The Cape turns away from the northern shores of Massachusetts the warm currents from the south and holds back some of the cold Labrador current, and it thus causes a decided difference in the climate of the north and south shores.

The drainage of the coastal plain is very irregular. North of Plymouth the plain is crossed by several small streams. From Plympton the main divide runs southeasterly to the coast just north of Bourne. In Bourne it forks, one part going south to Falmouth and then southwest through the Elizabeth Islands, and the other part curving in a rude semicircle near the inner side of Cape Cod. Only one stream north of the divide is as long as 4 miles, and most of the drainage is southward from the divide. Large tracts draining into ponds with no surface outlets are very common, owing to the sandy

subsoil, and are especially abundant on Cape Cod. The largest of these ponds, Long Pond, in Harwich, is 2½ miles long. These undrained areas are the spaces occupied by huge masses of ice while the drift was being deposited around them from the margins of the glacier.

The most prominent glacial deposits in the State are seen along the shores of Massachusetts and Buzzards bays and on Marthas Vineyard and Nantucket. In these areas there are belts of very irregular ground, much of which is 200 feet above the sea and contains numerous undrained ponds, irregular valleys, and hummocky hills. They are the terminal moraines formed by the dumping of waste around the margins of two great lobes of the glacier. The inner semicircular outline of Cape Cod was formed by one lobe, and the crescent of the Elizabeth Islands and the east shore of Buzzards Bay was formed by the other. These lobes nearly united, and the material dumped between them forms the high irregular country as far north as Scituate. Two similar loops during an eastern and farther advance of the ice formed the high ground of Marthas Vineyard and Nantucket. The higher hills were due to the great accumulations near the ice margins, and the lower ground to the south was formed by the outward wash of sand and gravel. These high marginal drift masses, called the moraines, curve broadly as a whole and form the divides as above described. Large groups of the morainic hills stand more than 200 feet above sea level between Plymouth and Barnstable, but from Barnstable to the end of the Cape few exceed 100 feet. Manomet Hill, in Plymouth, 394 feet, is the highest point on the moraine and also the highest ground east of the Wrentham and Quincy hill belt. Marthas Vineyard also includes numerous hills above 200 feet. Most of the rest of the coastal plain lies below 100 feet.

DEFINITION OF TERMS.

The volume of water flowing in a stream—the "run-off" or "discharge"—is expressed in various terms, each of which has become associated with a certain class of work. These terms may be divided into two groups—(1) those that represent a rate of flow, as second-feet, gallons per minute, miners' inches, and discharge in second-feet per square mile, and (2) those that represent the actual quantity of water, as run-off in depth of inches, acre-feet, and millions of cubic feet. The principal terms used in this report are second-feet, second-feet per square mile, run-off in inches, and millions of cubic feet. They may be defined as follows:

"Second-feet" is an abbreviation for "cubic feet per second." A second-foot is the rate of discharge of water flowing in a channel of rectangular cross-section 1 foot wide and 1 foot deep at an average

velocity of 1 foot per second. It is generally used as a fundamental unit from which others are computed by the use of the factors given in the tables of convenient equivalents (pp. 300–302).

"Second-feet per square mile" is the average number of cubic feet of water flowing per second from each square mile of area drained, on the assumption that the run-off is distributed uniformly both as regards time and area.

"Run-off (depth in inches)" is the depth to which an area would be covered if all the water flowing from it in a given period were uniformly distributed on the surface. It is used for comparing run-off with rainfall, which is usually expressed in depth of inches.

"Millions of cubic feet" is applied to quantities of water stored in reservoirs, most frequently in connection with studies of flood control.

The following terms not in common use are here defined:

"Discharge relation," an abbreviation for the term "relation of gage height to discharge."

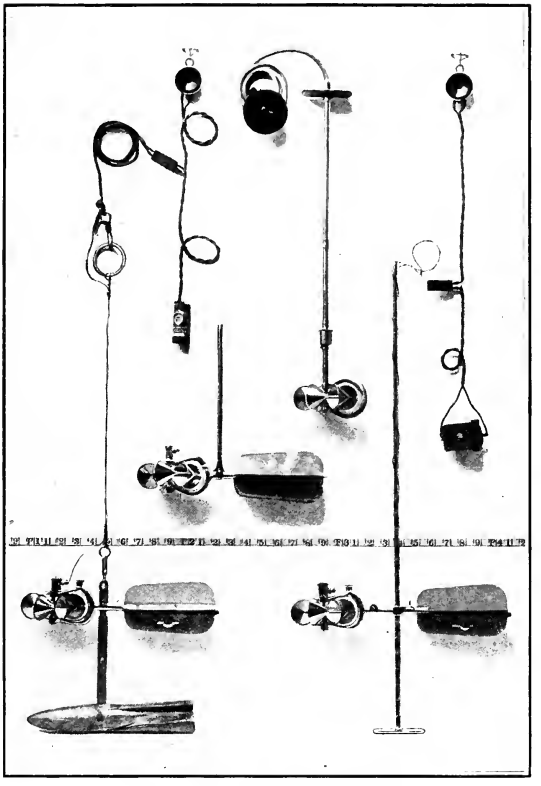
"Control," "controlling section," and "point of control," terms used to designate the section or sections of the stream below the gage which determine the discharge relation at the gage. It should be noted that the control may not be the same section or sections at all stages.

The "point of zero flow" for a given gaging station is that point on the gage—the gage height—to which the surface of the river would fall if there were no flow.

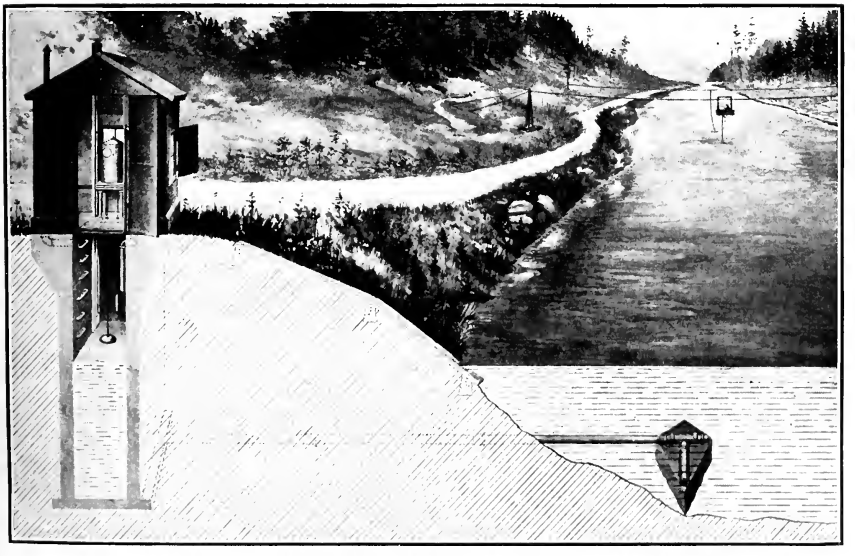
EXPLANATION OF DATA.

The data presented in this report are in general divided into periods beginning October 1 and ending September 30 of the following year. At the 1st of January in most parts of the United States much of the precipitation in the preceding three months is stored as ground water, in the form of snow or ice, or in ponds, lakes, and swamps, and this stored water passes off in the streams during and after the spring break-up. At the end of September, on the other hand, the only stored water available for run-off is possibly a small quantity in the ground; therefore the run-off for the year beginning October 1 is practically all derived from precipitation within that year.

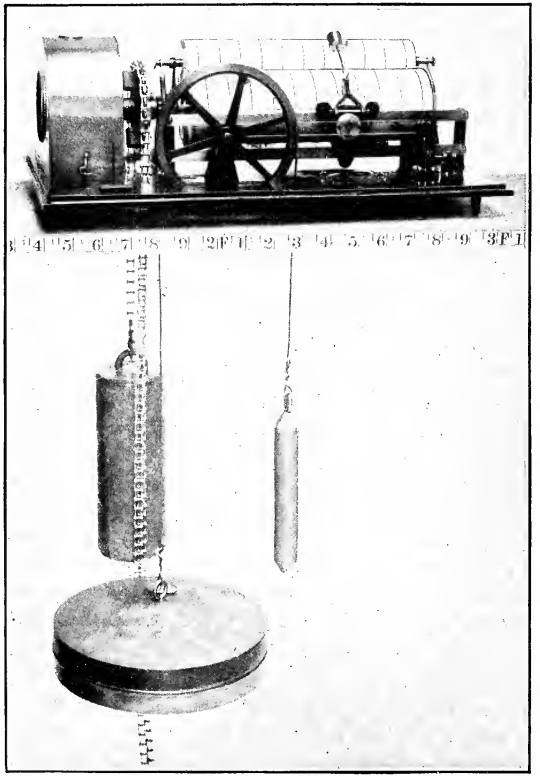
The base data collected at gaging stations (Pl. II, *B*) consist of records of stage, measurements of discharge, and general information used to supplement the gage heights and discharge measurements in determining the daily flow. The records of stage are obtained either from direct readings on a staff gage or from a water-stage recorder (Pl. III) that gives a continuous record of the fluctuations. Measure-



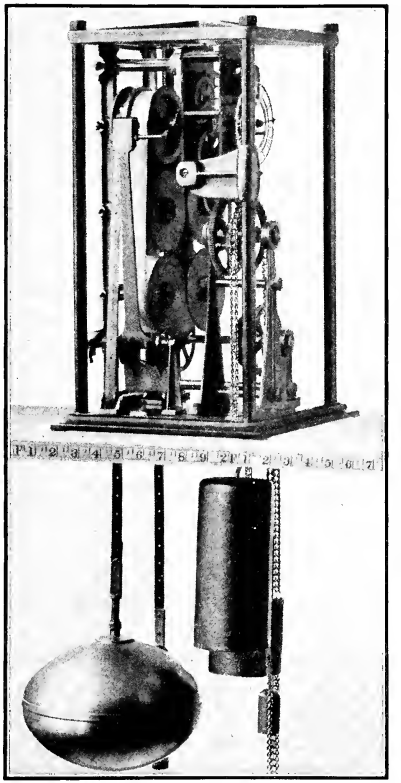
A. PRICE CURRENT METERS.



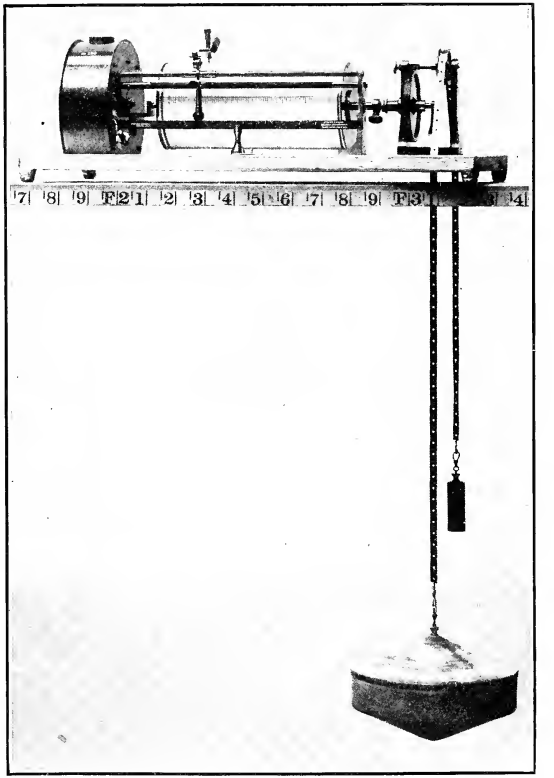
B. TYPICAL GAGING STATION.



A. STEVENS.



B. GURLEY PRINTING.



C. FRIEZ.

WATER-STAGE RECORDERS.

ments of discharge are made with a current meter (Pl. II, *A*) by the general methods outlined in standard textbooks on the measurement of river discharge.

From the discharge measurements rating tables are prepared that give the discharge for any stage, and these rating tables, when applied to the gage heights, give the discharge from which daily, monthly, and yearly mean discharge is determined.

The data presented for each gaging station in the area covered by this report comprise a description of the station, a table giving results of discharge measurements, a table showing the daily discharge of the stream, and a table of monthly and yearly discharge and run-off.

If the base data are insufficient to determine the daily discharge, tables giving daily gage heights and results of discharge measurements are published.

The description of the station gives, in addition to statements regarding location and equipment, information in regard to any conditions that may affect the constancy of the discharge relation, covering such subjects as the occurrence of ice, the use of the stream for log driving, shifting of channel, and the cause and effect of backwater; it gives also information as to diversions that decrease the flow at the gage, artificial regulation, maximum and minimum recorded stages, and the accuracy of the records.

The table of daily discharge gives the discharge in second-feet corresponding to the mean of the gage heights read each day. At stations on streams subject to sudden or rapid diurnal fluctuation the discharge obtained from the rating table and the mean daily gage height may not be the true mean discharge for the day. If such stations are equipped with automatic gages the true mean daily discharge may be obtained by applying the rating table to gage height figures at short intervals throughout the day.

In the table of monthly discharge the column headed "Maximum" gives the mean flow for the day when the mean gage height was highest. As the gage height is the mean for the day it does not indicate correctly the stage when the water surface was at crest height and the corresponding discharge was consequently larger than given in the maximum column. Likewise, in the column headed "Minimum" the quantity given is the mean flow for the day when the mean gage height was lowest. The column headed "Mean" is the average flow in cubic feet for each second during the month. On this average flow computations recorded in the remaining columns, which are defined on pages 23–24, are based.

The deficiency table presented for some of the gaging stations shows the number of days in each year on which the mean daily discharge was less than the discharge given in the table. By subtrac-

tion the table gives the number of days each year that the mean daily discharge was between the discharges given in the table and, also by subtraction, the number of days that the mean daily discharge was equal to or greater than the discharge given. For convenience the theoretical horsepower per foot of fall corresponding to the discharge is also given in the table. In using the table for studies of power, allowance should be made for the various losses, the most important being wheel loss and head loss.

ACCURACY OF FIELD DATA AND COMPUTED RESULTS.

The accuracy of stream-flow data depends primarily (1) on the permanency of the discharge relation and (2) on the accuracy of observation of stage, measurements of flow, and interpretation of records.

Footnotes added to the daily discharge tables give information regarding the probable accuracy of the rating tables used, and an accuracy column is inserted in the monthly discharge table. For the rating tables, "well defined" indicates, in general, that the rating is probably accurate within 5 per cent; "fairly well defined," within 10 per cent; "poorly defined" or "approximate," within 15 to 25 per cent. These notes are very general and are based on the plotting of the individual measurements with reference to the mean rating curve.

The letter in the column headed "Accuracy", in the monthly discharge table, rates the accuracy of the monthly mean and not that of the estimate of maximum or minimum discharge or the discharge for any one day. The rating is determined by considering the accuracy of the rating curve, the probable reliability of the observer, the number of gage readings per day, the range of the fluctuation in stage, and local conditions. In this column, A indicates that the mean monthly flow is probably accurate within 5 per cent; B, within 10 per cent; C, within 15 per cent; D, within 25 per cent. Special conditions are covered by footnotes.

The monthly means for any station may represent with high accuracy the quantity of water flowing past the gage, but the figures showing discharge per square mile and depth of run-off in inches may be subject to gross errors caused by the inclusion of large noncontributing districts in the measured drainage area, by lack of information concerning water diverted for various uses, or by inability to interpret the effect of artificial regulation of the flow of the river above the station. "Second-feet per square mile" and "Run-off (depth in inches)" are therefore not computed if such errors appear probable. All figures representing "second-feet per square

mile" and "run-off (depth in inches)" previously published by the Survey should be used with caution because of possible inherent sources of error not known to the Survey.

The table of monthly discharge gives only a general idea of the flow at the station and should not be used for other than preliminary estimates; the tables of daily discharge allow more detailed studies of the variation in flow. It should be borne in mind, however, that the observations in each succeeding year may be expected to throw new light on data previously published.

SPECIAL CONDITIONS AFFECTING HYDROMETRIC WORK IN MASSACHUSETTS.

At most of the gaging stations on streams in Massachusetts water-stage recorders have been found necessary on account of the large diurnal fluctuations in stage due to the operation of power plants. The flow of some of the streams is so completely regulated for power that estimates made from two gage readings a day are subject to errors amounting to several hundred per cent. The type of fluctuation occurring in a very completely regulated power stream is illustrated by the hydrograph of Quaboag River at West Brimfield, Mass. (fig. 1). Not only is there a large diurnal fluctuation in stage, but the form of the hydrograph varies at different times, so that it would be impossible to apply any coefficient to deduce the mean stage from two observations a day. Sundays and holidays, when the mills were not running, are easily noted by the changed appearance of the hydrograph.

The diurnal fluctuations of a partly regulated stream are illustrated by the hydrographs of Swift River at West Ware, Mass. (fig. 2). Although the form of the hydrograph and the amount of fluctuation may vary with the conditions of operation of the power plants for ordinary conditions of operation, when the mean discharge of this stream is below 100 second-feet the regulation entirely changes the natural conditions of flow and would make two observations a day of little value. For a mean discharge of 200 second-feet the effect of power regulation is slight, the peaks on the gage-height hydrograph being nearly submerged. Above 300 second-feet there appears to be no appreciable effect from power operation. For this stream the data obtained without the use of a water-stage recorder would probably be classed as "good" for about three months of the year, "fair" for about four months, and decidedly "poor" for the remaining five months. Any use of the data requiring a knowledge of the low-water flow would require continuous gage-height records.

Other types of fluctuation are illustrated by the hydrographs for Deerfield River at Charlemont, Mass. (fig. 3), and Westfield River near Westfield, Mass. (fig. 4). The hydrograph of the Westfield

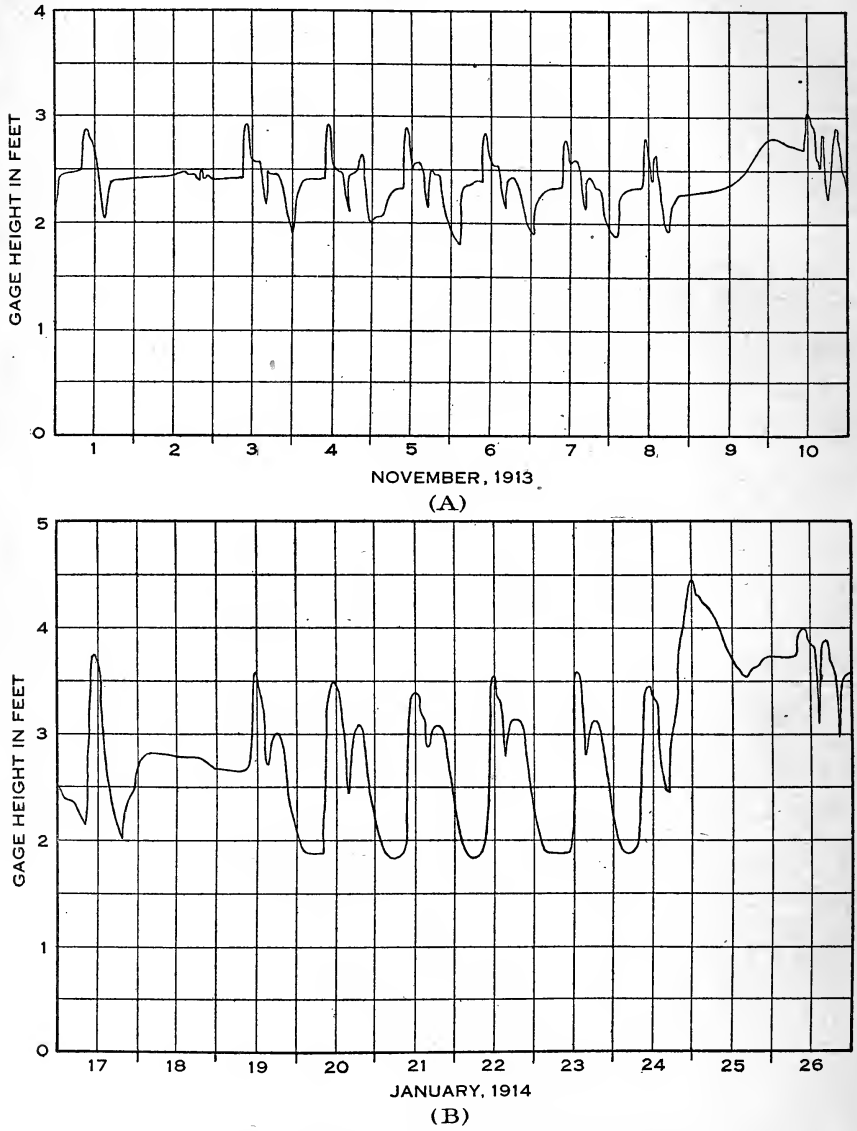


FIGURE 1.—Water-stage records of Quaboag River at West Brimfield, Mass.

shows a change in flow from 500 to 17,200 second-feet in 12 hours. The Westfield is not seriously affected by power regulation, but represents a class of streams having little natural storage and consequently a rapid run-off. Fluctuations due to rainfall are more

uncertain than those due to other causes, for the time of their occurrence can not be successfully predicted. The peak of the flood may

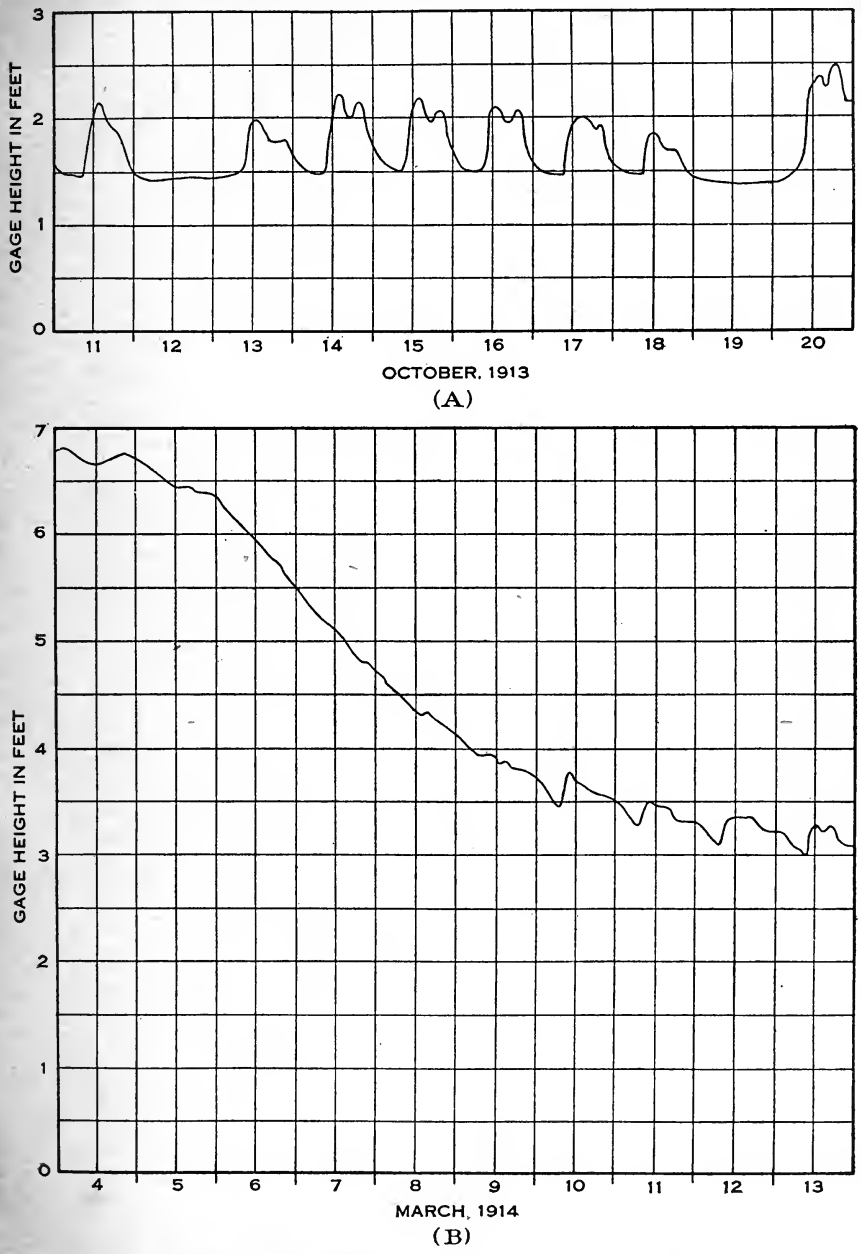


FIGURE 2.—Water-stage records of Swift River at West Ware, Mass.

be of only a few minutes duration, and therefore missed entirely if observations are confined to two (or even more than two) observations a day.

A knowledge of the maximum flow and its duration may be all important in connection with flood prevention.

The water-stage recorders used in collecting the data presented in this report are of two general types. The instruments of one type give a continuous graphic record of gage-height changes; those of the other print in figures every 15 minutes the height of water on the gage. (See Pl. III.)

As might be expected, the difficulty of determining the flow of power-regulated streams does not end when the continuous record of stage is obtained, but calls for special office methods in interpreting the records, for, as the relation of the gage height to discharge would be represented by a curvilinear function, the sudden changes in stage require the application of the rating table at short intervals

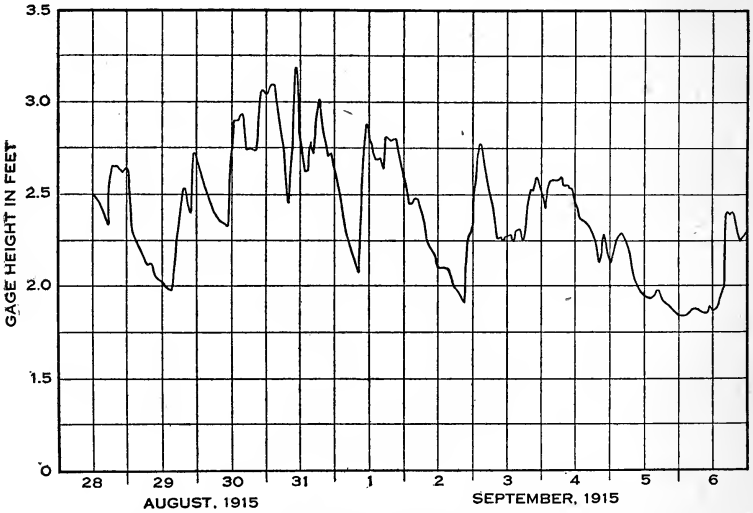


FIGURE 3.—Water-stage record of Deerfield River at Charlemont, Mass.

of time. On some of the streams it is necessary to apply the discharge rating in such a manner as to determine the discharge hourly throughout the year; on others two or four hour periods are used, and on streams affected less severely the discharge rating can be applied to the mean gage height for the 24-hour period. Various combinations of time intervals are used according to the stage and amount of fluctuation, and an effort is made to insure the highest degree of accuracy consistent with a rational expenditure of time and money.

Another feature which complicates the collection of stream-flow data in Massachusetts is the low temperature during the winter months and its effect on the regimen of the streams. The gaging stations are so located that under conditions of open water a given

stage of the stream, or gage height, represents a certain definite quantity of water passing the gage, the relation between the two being determined by a series of current-meter measurements taken at different stages. With the formation of ice this known relation ceases and conditions at once become uncertain and unstable. Fairly accurate determinations of the discharge of streams covered with or

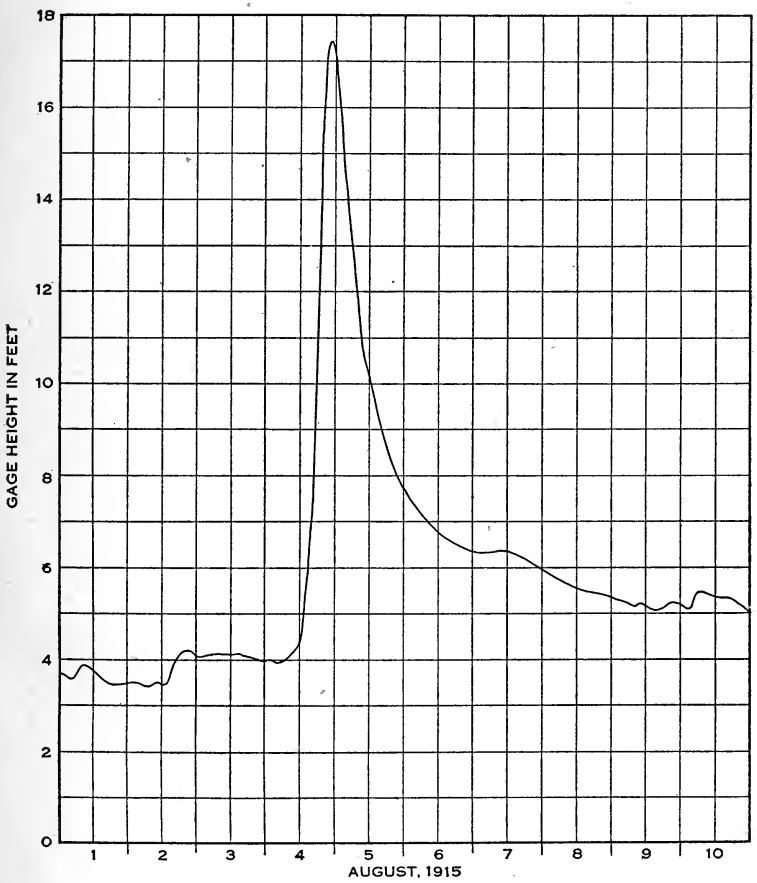


FIGURE 4.—Water-stage record of Westfield River near Westfield, Mass.

containing ice can, however, be made if several current-meter measurements of discharge are obtained and the gage-height record is continued.[1] If conditions of flow are such that two gage-height observations a day are sufficient, the records may be obtained during the winter without great difficulty, although at greater expense on account of the need of more discharge measurements. For automatic-gage stations, however, considerable difficulty is frequently encountered in keeping the gage well free from ice. Special construction

[1] Hoyt, W. G., The effects of ice on stream flow: U. S. Geol. Survey Water-Supply Paper 337, 1913.

becomes necessary and constant supervision is required to insure proper operation of the instruments. Plate X, *B* (p. 180), shows ice on Farmington River at New Boston, Mass., March 4, 1914. The peculiar conditions here illustrated were caused by the break-up of a small tributary that enters a quarter of a mile above the gage. The ice from the tributary, which has a steep gradient, piled up on the gaging section while the ice in the main stream below the gage was not carried out. Another peculiar condition is illustrated by Plate X, *A* (p. 180), which shows the effect of fluctuations in stage causing unstable conditions of the ice at the gaging section. The effects of the fluctuations in flow are also greatly increased during the winter period, as may be seen by referring to the hydrograph of Quaboag River at West Brimfield, Mass., for January, 1914 (fig. 1, B).

The special methods required to carry on stream gaging work successfully under the conditions of rapid fluctuation in stage and in a climate subject to the rigors of a northern winter are the outgrowth of years of experience by engineers of the Geological Survey.

GAGING STATIONS.

The following list comprises the gaging stations maintained in Massachusetts by the United States Geological Survey and cooperating parties. Two stations outside of Massachusetts are included in this list by reason of their value in connection with studies of streams within the State. Tributaries of main streams are indicated by indention. The date shows the years or parts of years for which records are available.

Housatonic River near Great Barrington, 1913–1915.
Housatonic River at Falls Village, Conn., 1912–1915.
Connecticut River at Orford, N. H., 1900–1915.
Connecticut River at Sunderland, 1904–1915.
Connecticut River at Holyoke, 1880–1899.
  Millers River at Wendell Depot, 1909–1913.
  Millers River at Erving, 1914–15.
    Moss Brook at Wendell Depot, 1909–10.
  Deerfield River at Hoosac Tunnel, 1909–1913.
  Deerfield River at Shelburne Falls, 1907–1915.
  Deerfield River at Charlemont, 1913–1915.
  Deerfield River at Deerfield, 1904–1906.
  Chicopee River:
    Ware River at Ware, 1904–1911.
    Ware River at Gibbs Crossing, 1912–1915.
      Burnshirt River near Templeton, 1909.
    Swift River at West Ware, 1910–1915.
    Quaboag River at West Warren, 1904–1907.
    Quaboag River at West Brimfield, 1909–1915.
  Westfield River at Knightville, 1909–1915.
  Westfield River at Russell, 1904–1906.

Connecticut River basin—Continued.
Westfield River near Westfield, 1914–15.
Middle Branch of Westfield River near Goss Heights, 1910–1915.
West Branch of Westfield River at Chester, 1915.
Westfield Little River near Westfield, 1905–1915.
Borden Brook near Westfield, 1910–1915.
Farmington River near New Boston, 1913–1915.
Taunton River:
Matfield River at Elmwood, 1909–10.
Satucket River near Elmwood, 1909–10.
Charles River at Waltham, 1903–1905.
Mystic Lake near Medford, 1878–1897.
Merrimack River at Lowell, 1848–1861; 1866–1915.
Merrimack River at Lawrence, 1880–1915.
Nashua River:
South Branch of Nashua River at Clinton, 1896–1915.
Concord River at Lowell, 1901–1915.
Sudbury River at Framingham, 1875–1915.
Lake Cochituate at Cochituate, 1863–1915.

HOUSATONIC RIVER BASIN.

GENERAL FEATURES.

Housatonic River rises in Berkshire County, Mass., its headwaters interlocking with those of Westfield River on the east, the Hoosic on the north, and Kinderhook Creek on the west. The head of the main stream is found near Washington Station, in the town of Washington, and its course is northward to Dalton. From Dalton the river flows southwestward to Pittsfield, where it receives a branch from the north and whence its general course is southerly to Long Island Sound, which it enters near Stratford, Conn. It is about 125 miles long and its drainage area comprises 1,930 square miles. The drainage area above the Massachusetts State line is 532 square miles, of which 487 square miles is in Massachusetts, 33 square miles in New York, and 12 square miles in Connecticut. The area above the gaging station near Great Barrington is 280 square miles and above the station at Falls Village, Conn., 644 square miles.

Some of the headwater streams rise at an altitude exceeding 2,000 feet above sea level. At Pittsfield the elevation is about 1,000 feet. In its lower course the river traverses a wide valley, much of which is occupied by farms. In most places the bed of the river is composed of gravel, but in a few it is made up of ledges of limestone and granite, which produce falls. The basin is to some extent forested, especially in the headwater region, but as a whole it consists largely of farm lands. The basin includes about 15 square miles of lake and pond surface, and offers some opportunities for improvement of storage.

Power has been developed at Housatonic, Great Barrington, and a number of other places in Massachusetts, but considerable power remains unutilized on the main river as well as its tributaries.

HOUSATONIC RIVER NEAR GREAT BARRINGTON, MASS.

LOCATION.—At a highway bridge about a quarter of a mile northeast of the Van Deusenville railroad station and 2 miles north of Great Barrington.

DRAINAGE AREA.—280 square miles.

RECORDS AVAILABLE.—May 17, 1913, to September 30, 1915.

GAGE.—Inclined staff on downstream side of left abutment of bridge; vertical high-water section attached to bridge abutment.

DISCHARGE MEASUREMENTS.—Made from upstream side of bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of sand and gravel; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 7.9 feet, March 29, 1914; approximate discharge, 5,200 second-feet. Minimum stage: Zero flow at various times caused by storage of water above the mills.

WINTER FLOW.—Discharge relation not seriously affected by ice.

REGULATION.—Storage above dam of a paper mill about a mile above station causes low flow on Sundays and holidays.

ACCURACY.—Records based on two gage readings a day and are considered fair.

Discharge measurements of Housatonic River near Great Barrington, Mass., during 1913–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
May 21	C. H. Pierce	2.19	409	Apr. 16	R. S. Barnes	3.96	1,590
Aug. 7	do	1.47	160	17	do	4.00	1,680
Oct. 18	R. S. Barnes	1.48	159	Aug. 16	O. W. Hartwell	1.19	80
19	do	.74	13.7	Sept. 27	R. S. Barnes	.66	12.4
1914.				Dec. 17	do	1.46	151
Mar. 3	R. S. Barnes	3.38	1,170	1915.			
3	C. H. Pierce	3.27	1,130	Feb. 2	R. S. Barnes	[a] 2.42	278
19	do	3.12	996	Apr. 9	do	2.38	512
20	do	2.88	837				

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Housatonic River near Great Barrington, Mass., for the years ending Sept. 30, 1913–1915.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1913.						1913.					
1		165	295	165	7	16		255	225	35	83
2		420	240	85	57	17	355	255	225	26	81
3		335	240	56	65	18	195	355	210	147	81
4		420	150	122	69	19	335	375	210	43	57
5		375	65	165	81	20	397	355	122	112	54
6		240	65	159	107	21	355	375	240	138	31
7		375	240	105	37	22	375	335	225	77	54
8		105	225	159	105	23	375	225	240	110	110
9		295	225	110	87	24	1,050	520	225	11	122
10		420	240	17	97	25	640	275	240	112	83
11		375	225	35	105	26	670	255	240	73	90
12		335	240	23	105	27	640	255	122	150	35
13		397	135	83	22	28	550	240	225	112	28
14		295	225	57	6	29	700	122	195	110	141
15		65	225	29	87	30	805	295	150	57	165
						31	770		150	9	

Daily discharge, in second feet, of Housatonic River near Great Barrington, Mass., for the years ending Sept. 30, 1913–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.											
1	135	255	255	240	470	2,060	1,260	335	225	85	125
2	135	75	375	225	670	2,560	1,190	335	210	122	138
3	120	255	520	240	980	3,460	840	255	195	97	165
4	95	210	335	397	805	2,830	805	255	122	195	165
5	54	165	355	375	1,050	2,650	910	295	56	195	195
6	195	240	375	240	910	1,500	1,660	275	105	141	56
7	107	275	335	397	770	1,420	1,500	255	295	110	130
8	122	162	520	375	670	1,740	1,190	255	295	17	195
9	147	54	1,050	470	470	3,550	1,050	275	255	51	150
10	195	910	640	335	610	4,300	840	255	355	34	165
11	159	1,190	610	335	550	3,920	735	295	295	75	135
12	31	1,050	610	240	495	2,470	910	335	165	165	195
13	95	670	580	240	445	2,300	1,500	141	180	165	56
14	225	520	397	255	355	2,060	1,500	150	225	180	240
15	135	470	375	100	355	1,820	1,420	195	225	141	165
16	135	397	495	195	355	1,740	1,260	195	240	97	196
17	85	255	470	180	335	2,830	770	225	225	110	138
18	81	420	375	.....	670	1,660	875	225	165	153	195
19	22	420	375	.....	1,120	1,660	640	255	67	180	122
20	47	495	355	.....	1,120	2,300	640	85	255	165	32
21	225	495	255	.....	640	3,370	640	255	180	195	85
22	150	445	335	.....	315	3,100	610	335	225	355	165
23	132	375	397	.....	445	2,470	495	355	180	122	138
24	195	255	355	.....	470	1,500	375	210	150	335	162
25	255	375	165	.....	520	1,500	295	195	141	240	162
26	700	315	397	.....	910	1,500	445	240	17	180	105
27	1,580	375	495	.....	2,470	1,660	397	75	85	159	48
28	1,120	295	240	.....	4,580	1,660	550	165	130	240	112
29	980	420	295	.....	5,070	1,660	355	48	150	115	125
30	420	255	255	.....	3,920	1,420	210	240	180	22	110
31	375	.....	275	.....	2,470	.....	295	.....	159	105	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	115	10	110	159	420	520	375	420	195	180	159	445
2	112	122	125	255	470	980	275	355	195	255	165	470
3	87	165	150	67	295	735	130	295	240	315	295	335
4	13	150	115	90	315	580	275	397	122	420	315	255
5	56	97	115	81	335	580	255	420	110	255	1,340	153
6	135	130	77	87	700	495	375	355	13	420	1,190	110
7	122	22	90	445	520	420	520	315	141	375	1,120	355
8	125	159	162	520	580	420	520	420	122	1,050	770	240
9	97	75	85	550	580	580	470	335	105	4,110	69	315
10	24	150	100	295	445	470	397	315	97	3,370	520	275
11	3	107	110	210	375	335	1,050	397	81	2,060	520	240
12	51	90	61	195	375	420	2,140	355	69	1,420	420	180
13	32	57	54	610	315	445	2,060	315	85	1,190	315	225
14	100	132	150	520	335	375	1,740	225	97	980	315	225
15	107	165	135	375	580	315	980	295	130	700	375	195
16	97	97	162	335	2,470	420	770	195	122	495	240	240
17	49	125	165	295	1,740	397	640	195	75	470	375	225
18	1	195	159	420	1,050	355	445	255	115	295	470	255
19	48	130	65	1,500	770	355	470	275	97	275	375	180
20	125	107	63	1,260	700	315	610	295	73	520	275	240
21	122	48	97	1,050	397	255	520	255	225	580	210	275
22	165	67	165	295	520	375	420	275	130	470	355	520
23	150	105	195	240	520	335	375	375	225	445	315	445
24	110	130	150	495	520	397	335	295	195	470	580	397
25	2	135	17	445	3,370	355	355	255	195	470	550	255
26	85	37		420	3,640	420	240	335	165	255	610	210
27	90	122	122	445	3,190	375	420	295	165	495	520	255
28	75	90	56	335	1,190	315	335	335	180	295	445	255
29	81	11	85	225	.....	225	295	375	210	355	355	75
30	83	165	100	95	.....	375	295	165	165	255	195	225
31	47	.....	105 135	150	.....	375	.....	195	.....	150	550	.....

NOTE.—Discharge determined from a rating curve well defined below 1,700 second-feet. Discharge relation affected by ice Jan. 18 to Feb. 28, 1914.

Monthly discharge of Housatonic River near Great Barrington, Mass., for the years ending Sept. 30, 1913–1915.

[Drainage area, 280 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1913.						
May 17–31	1,050	195	547	1.95	1.09	B.
June	520	65	304	1.09	1.22	B.
July	295	65	203	.725	.84	B.
August	165	9	86.8	.310	.36	B.
September	165	6	75.1	.268	.30	B.
1913–14.						
October	1,580	22	273	.975	1.12	B.
November	1,190	54	403	1.44	1.61	B.
December	1,050	165	415	1.48	1.71	B.
January	.....	.....	[a] 255	.911	1.05	C.
February	.....	.....	[a] 279	.993	1.03	D.
March	5,070	315	1,130	4.04	4.66	C.
April	4,300	1,420	2,290	8.18	9.13	C.
May	1,660	210	844	3.01	3.47	B.
June	355	48	234	.835	.93	B.
July	355	17	186	.664	.77	B.
August	355	17	147	.525	.61	B.
September	240	32	139	.496	.55	B.
The year	5,070	17	549	1.96	26.64	
1914–15.						
October	165	1	80.9	.289	.33	B.
November	195	10	106	.379	.42	B.
December	195	17	112	.400	.46	C.
January	1,500	67	402	1.44	1.66	C.
February	3,640	295	954	3.41	3.55	C.
March	980	225	429	1.53	1.76	B.
April	2,140	130	603	2.15	2.40	B.
May	420	165	309	1.10	1.27	B.
June	240	13	138	.493	.55	B.
July	4,110	150	755	2.70	3.11	B.
August	1,340	69	462	1.65	1.90	B.
September	520	75	269	.961	1.07	B.
The year	3,640	1	382	1.36	18.48	

[a] Discharge for the month estimated on account of ice.

HOUSATONIC RIVER AT FALLS VILLAGE, CONN.

LOCATION.—About half a mile below the power plant of the Connecticut Power Co.; 23 miles north of Gaylordsville.

DRAINAGE AREA.—644 square miles (authority Stone & Webster Engineering Corporation).

RECORDS AVAILABLE.—July 11, 1912, to September 30, 1915.

GAGE.—Temporary staff gages July 11 to October 26, 1912; chain gage 1,500 feet below the railroad station October 27, 1912, to May 22, 1914; Stevens water-stage recorder 300 feet below chain gage, December 15, 1913, to September 30, 1915; all gage heights referred to datum of chain gage.

DISCHARGE MEASUREMENTS.—Made by wading at low stages, from a boat at medium stages, and by means of floats at flood stages.

CHANNEL AND CONTROL.—Channel deep and fairly uniform in cross section; one channel at all times; control not clearly defined except at low stages; probably permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 13.3 feet at 4.30 p. m., March 29, 1914; discharge, 8,830 second-feet. Minimum stage recorded: Zero, at various times during the months of October, 1914, to January, 1915, owing to shutting down of power plant and storage of water.

WINTER FLOW.—Discharge relation not seriously affected by ice.

REGULATION.—Prior to June, 1914, the flow at low water was regulated by power plants farther upstream; since June, 1914, the plant of the Connecticut Power Co. has completely regulated the low-water flow. The plant has a present capacity of 9,000 kilowatts with a normal head on the wheels of 90 feet.

ACCURACY.—Record has been obtained by standard methods of stream-gaging and is considered good.

COOPERATION.—Entire record furnished by Connecticut Power Co.

Discharge measurements of Housatonic River at Falls Village, during years 1912–1914.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
Aug. 7	D. M. Wood	[a] 0.63	258	July 8	D. M. Wood	1.60	254
8	do	[a] .33	155	9	do	1.44	205
Oct. 26	Wood and Hodsdon	6.05	2,630	9	do	1.55	235
27	do	5.51	2,270	Sept. 20	Jony and Magee	1.46	199
Nov. 11	G. E. Hodsdon	4.58	1,830	30	do	.94	82
12	do	4.02	1,380	1914.			
13	do	3.54	1,130	May 21	Wood and Jony	4.00	1,360
1913.							
Mar. 17	Hodsdon and Jony	6.06	2,620				
May 16	Jony and Downs	2.45	667				

[a] Staff gage.

Daily discharge, in second-feet, of Housatonic River at Falls Village, Conn., for the years ending Sept. 30, 1912–1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1912.				1912.				1912.			
1	.....	192	189	11	383	803	430	21	329	450	304
2	.....	224	445	12	334	637	304	22	231	374	250
3	.....	266	450	13	338	545	329	23	288	338	200
4	.....	224	401	14	440	392	182	24	255	555	234
5	.....	175	576	15	266	324	214	25	228	370	378
6	.....	248	571	16	324	347	228	26	214	206	273
7	.....	252	495	17	262	262	329	27	196	307	182
8	.....	169	425	18	262	316	374	28	145	206	189
9	.....	172	308	19	388	276	256	29	160	276	214
10	.....	172	276	20	284	430	242	30	175	245	234
								31	270	206	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	280	646	845	2,110	1,770	1,660	4,410	1,420	632	208	118	190
2	252	790	1,050	2,800	1,660	1,330	3,660	1,270	700	196	133	190
3	256	1,120	1,720	2,430	1,600	1,290	3,180	1,010	800	328	178	187
4	300	790	1,960	2,740	1,320	1,320	2,880	860	800	294	187	205
5	234	775	1,900	2,800	1,290	1,260	2,720	480	1,250	211	202	178
6	154	710	1,990	1,960	1,600	1,020	2,660	845	1,120	208	118	211
7	130	632	1,960	2,170	1,550	825	2,500	840	1,060	175	190	175
8	130	2,130	1,880	2,280	1,540	865	2,300	700	1,080	224	184	163
9	130	2,800	1,540	2,450	1,480	910	2,100	650	740	214	190	187
10	130	2,410	1,340	2,980	1,420	1,290	1,810	508	624	208	214	163
11	130	1,820	1,230	3,020	1,480	1,790	1,670	480	592	217	136	196
12	130	1,380	1,120	2,840	1,320	1,930	3,670	440	529	224	112	166
13	130	1,190	1,100	2,600	1,120	1,720	4,200	610	472	208	142	166
14	130	1,190	1,120	2,340	1,000	1,890	4,240	628	428	199	133	181
15	217	1,550	1,080	2,070	915	3,210	4,060	556	360	211	136	85
16	238	1,470	850	2,080	940	3,900	3,420	542	208	199	115	92
17	109	1,300	925	2,140	588	3,800	2,980	619	199	175	142	80
18	109	1,170	1,100	2,300	900	3,500	2,500	574	178	196	118	166
19	157	1,000	1,230	2,670	655	2,730	2,180	512	184	214	118	166
20	136	975	1,530	2,720	725	2,390	1,740	655	360	202	118	184
21	109	950	1,580	2,650	750	2,410	1,540	664	725	154	196	166
22	91	875	1,590	2,080	1,140	2,430	1,520	810	400	80	190	178
23	166	860	1,530	2,080	1,640	2,330	1,450	880	388	205	172	283
24	2,160	865	1,510	2,130	1,510	1,980	1,320	1,460	400	214	163	297
25	2,960	870	1,320	2,150	1,230	1,960	1,290	1,970	400	214	166	283

Daily discharge, in second-feet, of Housatonic River at Falls Village, Conn., for the years ending Sept. 30, 1912–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912 13.												
26	2,690	725	1,200	2,150	1,290	2,430	1,250	1,600	332	109	166	208
27	2,360	1,170	1,370	2,110	825	3,930	1,050	1,150	336	139	80	190
28	1,420	1,040	1,450	2,080	1,690	6,960	1,070	1,030	272	139	175	214
29	1,160	1,060	1,440	1,400	.....	8,110	1,610	1,710	283	115	196	208
30	1,000	1,100	1,470	1,290	.....	7,160	1,510	1,650	220	148	202	72
31	725	.....	1,810	1,690	.....	5,520	.....	1,240	.....	154	166	.....
1913–14.												
1	308	885	890	600	1,800	400	4,640	2,710	606	392	217	252
2	420	592	880	550	1,600	1,000	4,580	2,470	583	396	196	244
3	448	596	1,000	450	1,300	2,500	5,100	1,960	332	364	220	252
4	297	700	870	400	1,100	2,300	4,830	1,710	512	244	217	248
5	205	740	740	350	1,000	2,100	4,320	1,860	632	208	224	217
6	211	601	745	350	800	1,900	3,120	3,330	696	208	252	193
7	178	583	805	350	800	1,600	2,750	3,430	565	353	234	196
8	154	538	1,550	350	800	1,400	2,860	3,050	583	570	214	248
9	196	710	1,490	350	800	1,280	4,740	2,630	480	420	196	241
10	178	1,220	1,300	300	700	1,330	5,680	2,260	448	368	258	244
11	181	2,020	1,240	300	700	1,240	5,640	1,700	400	416	280	238
12	214	2,010	900	250	600	1,420	5,040	1,900	408	396	262	211
13	376	1,350	1,170	200	600	1,020	4,260	2,770	440	372	248	163
14	280	1,220	1,010	200	600	975	3,660	3,160	332	318	234	220
15	311	1,010	740	200	600	855	3,300	2,840	220	318	202	234
16	258	1,040	875	300	600	850	3,280	2,600	380	314	190	227
17	227	900	900	300	600	2,020	3,190	2,120	300	297	258	184
18	205	880	915	300	600	2,800	3,220	1,640	416	350	252	169
19	199	1,100	700	300	600	2,530	3,050	1,530	404	308	248	160
20	196	1,200	725	300	600	2,120	3,050	1,460	388	266	227	142
21	262	1,170	619	300	500	1,950	3,820	1,440	234	272	208	163
22	314	1,180	715	300	450	1,920	4,280	1,320	404	283	300	172
23	346	1,060	735	300	450	860	4,140	1,100	619	255	392	163
24	290	885	870	600	450	1,000	3,600	835	230	248	332	157
25	592	950	930	1,200	400	2,350	2,930	691	262	238	346	160
26	2,060	955	835	800	350	1,590	2,900	750	227	208	300	151
27	4,510	850	810	800	400	4,040	3,350	780	248	238	269	136
28	3,500	795	855	900	400	7,190	3,220	780	318	220	276	166
29	2,630	900	900	1,000	.....	8,520	3,090	790	262	224	336	163
30	1,700	880	870	1,400	.....	7,390	3,100	637	290	220	244	157
31	1,270	.....	673	1,600	.....	5,640	.....	480	.....	214	266	.....
1914–15.												
1	160	90	139	45	1,050	2,760	542	855	336	339	529	1,090
2	169	109	154	70	1,500	2,020	484	820	346	504	583	765
3	151	109	151	35	1,360	1,640	488	682	325	715	664	780
4	139	118	142	135	1,150	1,320	432	673	356	865	1,210	686
5	163	136	112	140	1,060	1,340	556	740	318	845	3,220	614
6	166	133	95	145	1,340	1,140	632	765	241	830	3,320	516
7	166	100	115	950	2,320	1,040	915	650	311	910	2,720	500
8	169	98	136	2,240	1,950	920	1,090	740	308	1,080	2,170	504
9	157	112	157	1,680	1,490	935	1,030	920	314	3,390	1,610	583
10	160	118	118	1,270	1,240	955	1,020	715	280	4,480	1,460	588
11	133	98	130	760	960	920	1,340	705	224	4,390	1,330	460
12	154	88	139	950	840	725	2,740	664	187	3,540	1,230	368
13	148	87	106	2,090	870	735	3,120	610	154	2,630	1,170	448
14	59	73	148	2,000	860	730	2,810	534	234	1,990	895	444
15	24	29	145	1,240	1,460	664	2,240	460	266	1,580	830	420
16	37	154	151	765	3,830	601	1,620	464	255	1,280	850	460
17	60	139	151	668	3,960	691	1,390	436	241	980	1,020	476
18	92	136	151	1,700	3,140	646	1,230	476	297	960	1,060	538
19	121	136	124	2,690	2,200	592	990	504	356	835	910	400
20	121	127	100	2,660	1,490	588	1,070	500	529	1,360	845	516
21	136	139	151	2,040	1,170	538	1,000	456	512	1,220	632	642
22	121	124	148	1,290	965	538	830	700	452	1,400	1,010	1,020
23	121	157	130	965	1,040	547	875	678	420	1,230	1,730	1,080
24	98	148	125	1,650	1,330	512	795	668	560	1,080	1,740	975
25	88	145	109	1,420	3,760	592	740	596	420	935	1,450	686
26	112	112	86	1,190	5,850	642	637	547	416	730	1,440	350
27	112	115	98	1,000	4,800	655	686	614	276	745	1,260	730
28	115	115	138	810	3,740	601	720	601	350	850	1,040	583
29	112	100	136	655	.....	606	673	476	336	850	960	460
30	112	160	141	696	.....	606	730	432	339	850	1,060	456
31	112	.....	130	583	.....	601	.....	356	.....	840	975	.....

NOTE.—Gage-height record lacking, and discharge estimated Sept. 22, Oct. 7–14, 1912, and July 28–30, 1915. Ice reported in river Feb. 7–23, 1913, Jan. 1 to Mar. 8, 1914, and Jan. 1–7, 1915.

Monthly discharge of Housatonic River at Falls Village, Conn., for the years ending Sept. 30, 1912–1915.

[Drainage area, 644 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1912.					
July 11–31	440	145	275	0.427	0.33
August	803	169	321	.498	.57
September	576	182	316	.491	.55
1912–13.					
October	2,960	91	591	.918	1.06
November	2,800	632	1,180	1.83	2.04
December	1,990	845	1,410	2.19	2.52
January	3,020	1,290	2,300	3.57	4.12
February	1,770	588	1,250	1.94	2.02
March	8,110	825	2,700	4.19	4.83
April	4,410	1,050	2,420	3.76	4.20
May	1,970	440	915	1.42	1.64
June	1,250	178	536	.832	.93
July	328	80	193	.297	.34
August	214	80	157	.244	.28
September	297	72	181	.281	.31
The year	8,110	72	1,150	1.79	24.29
1913–14.					
October	4,510	154	726	1.13	1.30
November	2,020	538	984	1.53	1.71
December	1,550	619	912	1.42	1.64
January	1,600	200	513	.797	.92
February	1,800	350	721	1.12	1.17
March	8,520	400	2,390	3.71	4.28
April	5,680	2,750	3,820	5.95	6.64
May	3,430	480	1,830	2.84	3.27
June	696	220	407	.632	.71
July	570	208	306	.475	.55
August	392	190	255	.396	.46
September	252	136	196	.304	.34
The year	8,520	136	1,090	1.69	22.99
1914–15.					
October	169	24	122	.189	.22
November	160	29	117	.182	.20
December	157	86	131	.203	.23
January	2,690	35	1,110	1.72	1.98
February	5,850	840	2,030	3.15	3.28
March	2,760	512	884	1.37	1.58
April	3,120	432	1,110	1.72	1.92
May	920	356	614	.953	1.10
June	560	154	332	.516	.58
July	4,480	339	1,430	2.22	2.56
August	3,320	529	1,320	2.05	2.36
September	1,090	350	605	.939	1.05
The year	5,850	24	810	1.26	17.06

Days of deficiency in discharge of Housatonic River at Falls Village, Conn., during the years ending Sept. 30, 1912–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.			
		1912 [a]	1912–13	1913–14	1914–15
100	11.4	.....	7	.....	20
150	17.0	1	37	2	78
200	22.7	13	83	27	100
250	28.4	30	111	76	104
300	34.1	46	120	101	109
350	39.8	60	124	127	119
400	45.4	67	127	145	125
450	51.1	73	132	161	135
500	56.8	76	135	168	148
600	68.2	80	143	178	177
700	79.5	81	154	199	209
800	90.9	82	166	216	230
900	102	.....	182	241	250
1,000	114	.....	189	252	270
1,500	170	.....	255	287	323
2,000	227	.....	299	304	335
2,500	284	.....	328	315	344
3,000	341	.....	347	328	351
4,000	454	.....	357	347	361
5,000	568	.....	361	357	364
6,000	682	.....	362	362	365
7,000	795	.....	363	362	.....
8,000	909	.....	364	364	.....
9,000	1,020	.....	365	365	.....

[a] July 11 to Sept. 30, 1912.

NOTE.—The above table gives the theoretical horsepower per foot of fall that may be developed at different rates of discharge and shows the number of days on which the discharge and corresponding horsepower were, respectively, less than the amounts given in the columns for discharge and horsepower. In using this table allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

CONNECTICUT RIVER BASIN.

GENERAL FEATURES.

Connecticut River rises in the Connecticut lakes in northern New Hampshire and flows southward between New Hampshire and Vermont and across Massachusetts and Connecticut into Long Island Sound. It is the largest river in New England except the St. John, is about 345 miles long, and drains an area of 11,300 square miles, which is distributed as follows:

	Square miles.
Canada	105
New Hampshire	3,120
Vermont	3,970
Massachusetts	2,720
Connecticut	1,430

The river has many important tributaries, among which are Passumpsic, Ammonoosuc, Wells, White, Mascoma, Ottaqueechee, Sugar, West, and Ashuelot rivers, which join north of the Massachusetts line; Millers, Deerfield, Chicopee, and Westfield rivers, which enter in the State of Massachusetts; and Farmington River, which enters near Hartford, Conn.

From its headwaters in the Connecticut lakes to Long Island Sound the Connecticut falls about 1,900 feet. The upper parts of its basin are rugged, and for the most part forested, and the surface is broken by undulating ridges which here and there rise to mountain height. In central and southern New Hampshire and Vermont the country is hilly and most of the tributary streams have a good fall, but more of the area is in cultivation. Deerfield and Westfield rivers, rising in the Berkshires, in Massachusetts, are quick-spilling streams, with steep slopes and narrow valleys, largely wooded; Millers and Chicopee rivers, on the east, drain a flatter country in which ponds and reservoirs are numerous. In Connecticut the river valley is as a rule broad and the country rolling, its soil is very fertile, and it is an important farming district.

The rocks are in general granite, gneiss, mica slate, and mica schists. An exception to this is the red sandstone in the Connecticut Valley extending from New Haven nearly to the northern boundary of Massachusetts. The prevailing surface material is glacial drift.

The mean annual precipitation in the Connecticut Valley is about 40 inches, ranging from about 45 inches at Hartford to probably about 35 inches in the extreme upper portions. In a general way, there is usually a difference of a month in the time of beginning of the spring season in the lower portion of the river and at its headwaters, and this tends to diminish the severity of floods from melting snow and equalize the spring run-off. The range in winter weather is also somewhat variable, the lower courses of the river being frequently subject to several thaws, whereas the upper third of the river usually remains frozen throughout the winter. Snow accumulates to considerable depths. The river is navigable to Hartford and, by smaller boats, as far as Holyoke.

The natural facilities for storage on Connecticut River are perhaps less than on many of the New England rivers, although on Millers, Deerfield, and Chicopee rivers some storage has been developed. There are, however, many places in this basin where reservoirs could be constructed, and there is need of systematic effort in this direction as the low-water flow on the Connecticut could be much improved by utilizing some of these storage sites, especially in the upper parts of the basin. Sunapee Lake, tributary to the Connecticut through Sugar River, is 6.5 square miles in area and can be drawn down 60 inches.

The Connecticut and its tributaries are very important for water power. On the main river large power plants are in operation at Wilder, Bellows Falls, Vernon, Turners Falls, and Holyoke, but many power sites in this basin still remain undeveloped.

The longest record of flow in the Connecticut basin is that made at Holyoke, Mass., which extends back to 1880. This record was interrupted in 1899, but since 1904 the records of the station at Sunderland are available. The driest year during the period covered by these records was 1882–83, and the wettest 1889–90, the total flow during these two years being about in the ratio of 1 to 2.06.

The drainage areas of the river and of several of its tributaries are given in the following table:

Drainage areas of Connecticut River and tributaries.

River.	Locality.	Area.
		Sq. miles.
Connecticut	Mouth	11,400
Do	Hartford, Conn	10,600
Do	Holyoke, Mass	8,390
Do	Sunderland, Mass., at gaging station	8,000
Do	Orford, N. H., at gaging station	3,100
Passumpsic	Mouth	470
White	....do	740
West	....do	440
Ashuelot	....do	440
Millers	....do	394
Deerfield	....do	667
Chicopee	....do	721
Westfield	....do	515

CONNECTICUT RIVER AT ORFORD, N. H.

LOCATION.—At covered highway bridge between Orford, N. H., and Fairlee, Vt., approximately 10 miles downstream (by river) from mouth of Waits River.

DRAINAGE AREA.—3,100[1] square miles.

RECORDS AVAILABLE.—August 6, 1900, to September 30, 1915.

GAGE.—Chain attached to upstream side of bridge and inclined staff on left bank below bridge.

DISCHARGE MEASUREMENTS.—Open-water measurements made from downstream side of the bridge or from a cable.

CHANNEL AND CONTROL.—Channel wide and deep with gravelly bottom; control for low stages slightly shifting.

EXTREMES OF DISCHARGE.—Maximum stage recorded, 1900–1915: 33.4 feet at noon, March 28, 1913 (see fig. 5, p. 56); approximate discharge, determined from extension of rating curve, 57,300 second-feet. Minimum discharge for 24 hours: 288 second-feet, September 28, 1908.

WINTER FLOW.—Discharge relation seriously affected by ice, usually from December to March, but the relation remains unusually constant during each period.

REGULATION.—A special study by means of temporary installation of a water-stage recorder during September and October, 1914, showed no appreciable effect from the operation of any power plants above the station.

ACCURACY.—Rating curve fairly well defined and estimates during open-water periods considered good.

[1] Remeasured since published in previous reports.

Discharge measurements of Connecticut River at Orford, N. H., during 1900–1915.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1900.			
Aug. 7	E. G. Paul	3.60	1,530
1901.			
Apr. 15	C. A. Holden	17.4	[a] 17,000
June 22	do	6.80	4,240
Oct. 5	do	3.47	1,460
Nov. 2	do	3.67	1,590
1902.			
Apr. 10	C. A. Holden	11.63	10,700
Nov. 22	do	6.80	4,470
1903.			
Jan. 24	C. A. Holden	[b] 7.20	2,970
29	do	[b] 6.60	2,620
29	do	[b] 6.90	2,690
30	do	[b] 7.40	2,980
Feb. 7	do	[b] 7.45	2,990
7	do	[b] 7.45	3,030
Mar. 14	do	20.7	[a] 24,700
Apr. 23	do	8.25	6,220
June 2	E. C. Murphy	3.26	1,170
July 16	N. C. Grover	3.53	1,520
Aug. 29	C. A. Holden	4.55	2,150
Sept. 19	do	2.30	768
26	do	2.13	673
1904.			
Feb. 3	C. A. Holden	[b] 4.15	884
3	do	[b] 4.12	876
4	do	[b] 4.08	785
4	do	[b] 4.20	792
5	do	[b] 4.03	790
5	do	[b] 4.03	799
Apr. 30	do	18.03	20,900
July 6	S. K. Clapp	4.74	2,350
1905.			
Feb. 28	T. W. Norcross	[b] 4.07	686
Mar. 1	do	[b] 4.26	766
1	do	[b] 4.25	739
Apr. 5	A. D. Butterfield	11.9	11,500
6	do	11.7	10,900
Aug. 30	T. W. Norcross	5.62	2,980
1906.			
Feb. 8	T. W. Norcross	[b] 6.84	2,250
15	Norcross and Adams	[b] 6.80	2,240
17	do	[b] 6.56	2,040
Mar. 14	Barrows and Norcross	[b] 6.00	1,680
15	T. W. Norcross	[b] 5.59	1,490
1907.			
Feb. 20	Butterfield and Mention	[b] 4.51	1,100
21	do	[b] 4.64	1,090
Sept. 27	D. M. Wood	5.87	3,710
1908.			
Mar. 4	D. M. Wood	[b] 7.11	2,340
Sept. 24	do	2.04	439
Dec. 24	Wood and French	[b] 3.53	698
1909.			
Feb. 9	H. F. French	[b] 8.90	4,140
July 19	D. M. Wood	4.48	1,800
Sept. 9	do	4.53	1,800
Oct. 26	do	5.18	2,340
Dec. 18	do	[b] 5.10	1,640
1910.			
Mar. 29	T. W. Norcross	15.38	17,000
Aug. 17	G. M. Brett	5.99	3,280
1911.			
Apr. 29	Covert and De Golyer	18.75	24,100
June 22	G. H. Canfield	4.82	2,280
1912.			
Feb. 21	G. H. Canfield	[b] 5.28	1,370
Oct. 22	C. S. De Golyer	5.31	2,550
1913.			
Mar. 10	C. S. De Golyer	[b] 5.52	1,420
Apr. 30	R. S. Barnes	11.65	10,900
Sept. 11	G. H. Canfield	2.47	604
1914.			
Jan. 5	W. S. Easterly	[b] 5.42	1,580
16	do	[b] 4.89	1,190
Feb. 4	do	[b] 6.44	1,940
23	C. C. Covert	[b] 5.22	1,060
Nov. 4	R. S. Barnes	4.85	2,120
Dec. 23	C. S. De Golyer	[b] 4.92	1,040
24	R. S. Barnes	[b] 4.80	1,040
1915.			
Jan. 15	R. S. Barnes	[b] 5.73	1,410
Feb. 9	do	[b] 6.80	1,600
25	do	[b] 13.0	9,190
26	do	23.52	34,500
Apr. 28	do	13.70	14,100
Sept. 17	Thweatt and Adams	4.16	1,390
17	G. F. Adams	4.05	1,440
18	do	3.82	1,330

[a] Estimated or partly estimated.
[b] Discharge relation affected by ice; gage read to water surface.

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1900.			1900.			1900.		
1		1,100	11	2,520	1,000	21	2,190	1,000
2		1,460	12	2,610	950	22	1,880	1,100
3		1,530	13	2,880	815	23	1,600	2,030
4		1,220	14	3,270	950	24	1,460	2,520
5		1,100	15	4,120	905	25	1,340	2,190
6	1,670	815	16	5,110	1,000	26	1,340	1,880
7	1,460	1,000	17	4,450	1,100	27	1,340	1,600
8	1,600	950	18	3,900	1,100	28	950	1,400
9	1,740	1,000	19	3,070	1,000	29	1,220	1,880
10	2,350	1,100	20	2,700	1,000	30	1,160	2,350
						31	1,100	

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1900–1901.												
1.....	2,790	2,190	6,380	5,500	2,400	1,800	12,300	15,500	7,600	8,450	6,140	1,100
2.....	4,010	2,110	6,140	5,000	2,400	1,800	11,000	16,300	6,900	6,640	5,660	1,600
3.....	3,790	2,030	5,660	4,500	2,300	1,800	12,300	15,500	5,900	3,680	3,900	1,740
4.....	2,700	1,880	5,330	4,000	2,300	1,800	17,400	13,300	6,140	5,000	3,470	1,740
5.....	2,350	1,600	5,110	3,600	2,300	1,800	22,100	11,000	6,640	5,220	3,170	1,600
6.....	1,880	1,600	5,000	3,300	2,000	2,000	21,700	9,320	6,640	5,900	3,070	1,400
7.....	2,700	1,950	5,110	3,000	2,000	2,000	24,200	8,020	6,380	4,340	2,790	1,400
8.....	3,680	3,470	5,110	2,800	2,500	2,000	29,700	7,460	5,440	4,230	3,680	1,400
9.....	3,270	10,100	5,110	2,800	2,500	2,000	31,900	7,040	6,140	4,010	4,450	1,880
10.....	3,680	13,700	5,550	2,800	2,500	2,500	31,000	7,040	6,260	4,340	5,780	1,460
11.....	4,780	13,700	5,110	2,700	2,400	2,500	28,400	7,460	5,900	4,120	6,640	1,400
12.....	12,000	12,000	5,110	2,700	2,400	2,500	25,400	8,020	5,660	4,010	6,510	1,340
13.....	12,600	8,880	5,220	2,700	2,400	2,500	22,900	8,300	5,330	4,010	6,380	1,460
14.....	9,180	7,740	5,110	2,700	2,400	2,500	21,300	8,300	4,560	3,170	5,220	1,600
15.....	6,770	6,140	4,780	2,700	2,300	2,500	21,300	7,740	4,010	2,190	4,230	1,740
16.....	5,900	5,660	4,230	2,600	2,300	2,500	21,700	6,380	3,680	1,810	3,570	2,030
17.....	5,660	4,450	4,120	2,600	2,300	3,000	22,100	5,550	3,470	1,740	4,340	1,600
18.....	5,220	3,680	4,010	2,600	2,200	3,000	22,500	5,660	3,270	1,670	4,340	1,530
19.....	4,780	4,010	4,010	2,600	2,200	3,000	23,400	6,900	2,790	2,520	4,120	1,670
20.....	4,340	5,660	4,120	2,600	2,200	3,000	24,200	9,180	2,700	2,520	3,900	1,810
21.....	4,010	10,200	4,230	2,500	2,100	3,000	24,200	11,600	2,610	2,520	3,900	1,810
22.....	3,680	14,600	4,010	2,500	2,100	3,000	25,900	8,300	4,340	2,270	2,700	1,880
23.....	3,070	16,300	4,230	2,500	2,000	3,300	29,700	7,740	5,000	1,950	2,520	2,110
24.....	3,270	15,300	4,450	2,500	2,000	5,000	32,300	7,600	6,510	1,740	2,350	1,880
25.....	3,070	12,500	5,550	2,500	2,000	9,320	32,600	9,180	6,900	1,670	2,270	1,460
26.....	3,270	9,770	6,900	2,500	2,000	10,800	29,700	9,470	6,020	1,400	2,190	1,400
27.....	3,170	10,100	6,640	2,400	1,900	15,900	24,600	8,020	4,780	1,280	1,810	1,280
28.....	2,880	10,400	6,260	2,400	1,900	21,300	19,700	7,600	3,790	1,460	1,600	1,280
29.....	2,880	8,300	5,900	2,400	.....	19,500	16,600	8,300	4,340	1,880	1,400	1,220
30.....	2,520	6,770	5,900	2,400	.....	16,100	14,800	9,180	7,600	2,430	1,340	1,670
31.....	2,350	.....	5,900	2,400	.....	13,700	.....	9,030	.....	5,000	1,100	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901–2.												
1.....	1,340	1,670	1,460	5,000	2,700	12,100	23,200	16,800	17,000	6,020	2,190	2,110
2.....	1,340	1,670	1,530	6,000	2,600	27,100	21,700	16,400	11,500	5,780	4,890	2,030
3.....	1,400	1,600	1,600	6,000	2,600	43,400	18,200	16,600	9,320	6,260	6,510	2,110
4.....	1,400	2,030	1,500	6,000	2,600	38,800	14,400	15,000	11,600	6,770	7,460	2,110
5.....	1,460	1,460	1,500	6,000	2,500	25,000	11,300	14,800	12,300	5,660	6,140	2,270
6.....	1,670	1,340	1,500	5,500	2,500	29,300	10,800	9,470	11,200	5,330	5,000	2,270
7.....	1,880	1,340	1,500	5,000	2,500	21,900	10,100	9,320	10,800	4,670	4,780	2,110
8.....	1,740	1,280	1,500	5,000	2,500	18,700	9,620	8,300	10,500	4,560	4,670	2,430
9.....	1,530	1,340	1,500	4,500	2,500	18,500	9,320	7,320	9,770	4,340	4,560	2,880
10.....	1,530	1,400	2,500	4,000	2,500	18,500	10,200	7,040	12,500	4,340	4,780	3,790
11.....	1,460	1,740	3,000	3,800	2,400	19,100	12,600	7,040	11,500	4,120	4,560	4,670
12.....	1,460	1,600	4,560	3,700	2,400	19,300	13,000	6,260	10,200	3,470	5,780	5,330
13.....	1,400	1,340	5,220	3,600	2,400	20,300	14,200	5,780	9,030	3,170	8,300	5,220
14.....	1,880	1,740	5,660	3,500	2,300	19,300	13,000	5,000	7,740	3,070	6,380	5,000
15.....	2,190	2,030	13,000	3,400	2,300	18,700	12,600	5,330	7,460	2,880	4,780	4,560
16.....	4,670	2,030	30,400	3,300	2,200	18,500	11,300	5,550	7,180	3,470	4,560	4,230
17.....	5,220	2,110	28,400	3,200	2,200	18,500	8,600	5,220	11,300	3,790	4,230	4,120
18.....	3,470	2,350	20,300	3,100	2,200	18,700	8,880	4,890	14,600	3,790	3,680	4,010
19.....	3,370	2,190	16,100	3,100	2,100	18,500	9,320	4,560	15,300	3,900	3,070	2,700
20.....	3,070	1,810	8,600	3,100	2,100	18,900	9,320	4,670	10,400	3,900	2,700	2,520
21.....	2,970	1,670	6,140	3,000	2,100	18,900	9,620	4,560	6,900	4,010	2,430	4,340
22.....	2,790	1,400	6,640	3,000	2,000	19,100	11,600	4,780	6,640	4,450	2,350	5,220
23.....	2,610	1,400	7,180	3,000	2,000	19,100	12,100	4,670	6,140	4,890	3,070	4,560
24.....	2,430	1,530	6,000	3,000	3,000	18,500	12,300	5,550	5,550	4,670	4,230	4,120
25.....	2,270	1,950	5,000	2,800	5,000	18,400	12,600	6,140	5,110	4,560	4,560	2,970
26.....	2,110	2,030	4,500	2,800	8,000	16,800	13,700	8,160	4,890	4,340	5,550	3,070
27.....	2,430	2,110	4,000	2,800	5,660	14,800	16,300	12,000	6,900	3,900	5,220	3,170
28.....	2,520	1,950	3,800	2,700	2,880	11,600	16,400	29,500	8,450	3,370	2,790	3,070
29.....	2,350	1,530	3,500	2,700	.....	9,770	16,600	31,900	8,300	3,070	2,350	3,070
30.....	1,950	1,530	3,500	2,700	.....	14,400	16,400	26,700	7,600	2,790	2,270	2,970
31.....	1,740	.....	3,000	2,700	.....	21,700	.....	20,500	.....	2,520	2,270	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1902-3.												
1	2,880	10,100	3,270	3,350	4,170	13,200	18,500	5,660	1,740	2,030	2,610	2,030
2	2,700	8,020	3,270	3,350	4,090	17,800	16,600	5,780	1,400	2,030	3,470	1,950
3	2,610	6,640	3,370	3,420	3,850	17,400	13,900	5,660	1,280	2,190	2,970	1,950
4	2,350	5,900	3,370	3,420	3,700	16,100	14,400	5,000	1,280	2,430	2,110	1,880
5	2,520	5,550	3,130	3,230	3,700	14,800	22,900	4,670	1,160	2,520	1,880	1,880
6	2,520	5,000	2,890	3,140	3,630	13,800	18,900	4,340	1,100	2,190	1,600	1,880
7	2,520	4,780	2,650	3,000	3,140	12,000	16,100	4,010	1,220	1,950	1,600	1,740
8	2,520	4,560	2,650	2,860	2,860	11,500	14,000	4,010	1,340	1,810	1,530	1,340
9	2,610	4,230	2,600	2,830	2,860	17,600	15,500	4,120	1,400	1,530	1,530	1,160
10	2,970	3,900	2,600	2,810	2,930	24,800	15,500	4,340	1,660	1,400	1,530	1,100
11	3,070	3,680	2,600	2,790	3,070	31,900	15,200	4,450	1,460	1,530	1,670	1,000
12	3,270	3,470	2,600	2,770	2,930	33,400	13,900	4,560	2,190	2,110	2,110	1,000
13	3,070	3,680	2,580	2,740	3,420	33,000	12,300	4,340	4,780	2,520	2,110	1,000
14	2,970	5,000	2,650	2,710	3,930	29,300	10,700	3,470	7,740	2,110	2,030	950
15	2,880	6,140	2,930	2,680	3,850	27,400	10,500	3,680	7,740	1,670	1,950	950
16	2,790	6,260	2,930	2,650	3,770	26,300	10,200	3,270	5,660	1,400	1,880	860
17	2,790	6,260	2,930	2,650	3,770	25,000	10,400	3,270	4,120	1,460	2,110	770
18	2,700	5,660	2,930	2,560	3,490	22,100	8,880	3,270	3,170	2,110	1,810	725
19	2,700	5,330	2,930	2,460	3,140	19,500	8,160	2,880	2,790	2,970	1,340	770
20	2,790	4,670	3,560	2,360	3,140	21,500	8,020	2,520	2,790	2,970	1,280	770
21	3,270	4,560	3,140	2,260	3,070	28,200	7,180	2,520	3,070	2,350	1,460	815
22	5,550	4,340	3,020	2,580	3,070	33,700	6,380	2,430	3,370	2,350	2,270	770
23	5,000	4,230	2,910	3,210	3,070	37,800	6,140	1,950	6,260	2,350	3,270	725
24	4,560	4,340	2,800	3,070	3,070	40,100	5,550	2,110	5,660	2,430	3,170	680
25	4,120	4,340	2,680	2,720	2,930	39,900	5,550	2,030	4,670	2,520	2,970	640
26	3,470	4,120	2,740	2,650	2,860	37,000	5,550	1,740	3,470	2,430	2,610	680
27	3,070	3,900	2,800	2,510	2,860	32,100	5,440	1,600	3,270	3,370	2,350	680
28	6,140	3,790	2,860	2,380	2,720	25,900	5,330	1,530	2,520	4,010	2,430	725
29	19,700	3,680	2,930	2,580	.....	19,900	5,110	1,530	2,190	3,470	2,190	725
30	14,800	3,470	3,280	2,860	.....	16,100	5,110	1,460	2,190	2,880	1,950	770
31	12,000	.....	3,350	3,560	.....	13,900	.....	1,460	.....	2,610	2,030	.....
1903-4.												
1	860	1,280	1,220	980	800	1,160	14,600	22,500	4,780	1,810	1,530	1,400
2	860	1,340	1,220	920	800	1,160	13,700	22,900	4,340	1,740	1,600	1,280
3	905	1,530	1,280	920	800	1,160	13,300	21,300	4,120	1,740	1,600	1,340
4	905	1,880	1,340	920	750	1,160	11,200	20,900	3,570	1,880	1,460	1,340
5	905	1,810	1,340	980	750	1,220	8,880	19,700	3,470	2,350	1,400	2,270
6	1,050	1,740	1,280	980	750	1,400	8,160	16,800	3,470	2,270	1,340	3,900
7	1,220	1,670	1,530	980	700	1,400	9,470	15,700	3,790	1,950	1,160	3,790
8	1,280	2,110	1,530	800	700	1,470	10,400	13,300	5,000	1,670	1,050	2,970
9	1,280	2,030	1,460	800	700	3,360	14,000	11,300	6,260	1,530	905	2,700
10	1,340	1,880	1,460	800	750	3,670	18,900	11,300	5,780	1,400	1,000	2,350
11	1,220	1,810	1,530	750	750	3,010	21,700	11,600	4,670	1,460	1,340	1,740
12	1,100	1,600	1,670	700	750	2,590	20,900	14,600	3,900	1,000	1,340	1,740
13	1,000	1,530	1,670	700	750	2,240	18,200	13,200	3,270	1,050	1,460	1,400
14	860	1,400	1,670	750	750	2,030	14,800	10,100	2,880	1,340	1,600	1,400
15	905	1,280	1,700	800	750	1,960	10,700	8,740	2,610	1,670	1,670	1,740
16	905	1,340	1,700	750	800	1,820	8,450	14,800	2,270	1,740	1,600	5,110
17	950	1,400	1,700	700	800	1,680	7,460	18,900	2,190	1,670	1,740	5,660
18	1,000	1,460	1,700	700	800	1,750	7,740	19,500	2,190	1,670	1,530	5,000
19	1,740	1,460	1,700	650	800	1,610	7,460	23,600	2,110	1,160	1,460	4,450
20	1,880	1,340	1,700	650	800	1,540	6,640	22,900	2,110	1,100	1,600	4,010
21	2,030	1,220	1,750	650	800	1,540	6,640	22,300	2,030	1,000	2,350	3,900
22	1,740	1,340	2,800	700	800	1,680	6,900	16,800	1,530	950	3,900	5,220
23	1,530	1,340	2,100	700	860	1,890	7,320	13,000	1,670	950	4,780	5,900
24	1,600	1,400	1,960	700	920	8,840	9,030	10,400	1,740	815	4,340	4,670
25	1,740	1,340	1,610	700	920	8,840	11,000	8,740	1,810	860	4,120	4,450
26	1,950	1,280	1,340	750	1,040	10,400	16,300	8,300	1,740	905	3,470	5,660
27	1,810	1,160	1,280	750	1,100	17,200	17,800	7,600	1,810	905	2,700	7,460
28	1,740	1,100	1,220	750	1,220	18,600	18,500	7,040	1,400	1,100	2,350	6,510
29	1,530	1,050	1,100	800	1,160	21,700	21,500	6,770	1,950	1,340	2,030	5,330
30	1,280	1,160	1,040	800	.....	18,500	22,100	6,640	1,810	1,400	1,600	6,140
31	1,280	.....	1,040	800	.....	15,900	.....	6,260	.....	1,460	1,280	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.												
1	8,880	3,790	2,110	880	700	580	33,200	12,600	4,450	6,510	3,680	6,640
2	10,800	3,570	1,970	800	700	580	31,000	12,100	4,230	7,040	5,000	5,440
3	10,500	3,570	1,830	800	700	560	23,400	9,620	3,680	10,400	7,320	4,120
4	9,920	3,370	1,970	800	600	560	15,200	10,100	3,790	17,600	5,330	6,510
5	9,180	3,270	1,830	800	600	560	11,300	12,000	4,010	15,200	4,340	7,740
6	7,320	3,270	1,630	800	620	600	11,000	12,600	4,120	9,920	3,070	7,180
7	5,220	3,070	1,510	800	640	600	13,300	13,000	5,220	4,780	2,610	6,140
8	5,000	2,970	1,460	720	660	600	13,000	12,600	4,560	3,900	2,610	5,440
9	4,560	2,880	1,350	770	660	600	12,000	11,800	4,340	3,470	3,070	4,670
10	4,230	2,520	1,240	820	680	600	9,770	10,100	3,680	3,270	3,370	4,010
11	4,230	2,350	1,130	870	700	600	10,200	10,700	3,270	2,970	2,610	3,270
12	4,010	2,190	1,050	920	720	600	12,500	10,200	2,880	2,700	2,790	2,970
13	4,560	2,030	1,050	970	730	670	13,500	8,300	3,470	2,790	2,430	3,170
14	4,230	2,430	1,050	1,020	740	800	13,300	7,880	5,220	2,700	2,520	3,070
15	4,120	2,350	1,050	1,070	740	850	13,000	7,600	5,780	2,520	2,610	2,880
16	4,120	2,350	1,050	1,000	740	910	12,300	7,180	5,000	2,610	3,370	2,610
17	3,900	1,970	1,050	1,000	740	1,000	10,700	6,900	4,560	2,700	6,020	2,520
18	3,680	1,970	970	975	740	1,100	9,180	7,180	3,170	2,610	6,140	4,120
19	3,370	1,830	950	975	760	1,180	7,740	7,040	3,270	2,610	5,110	9,180
20	3,270	1,750	950	950	740	2,070	7,040	6,900	3,570	3,900	3,900	10,400
21	3,270	2,270	950	950	720	3,060	11,000	6,900	3,370	4,010	3,070	10,400
22	5,220	2,320	940	880	680	3,480	14,000	6,770	3,470	3,570	2,610	9,770
23	6,640	2,480	940	880	680	3,620	15,200	6,380	3,470	2,520	2,350	8,020
24	6,380	2,590	940	880	660	3,730	13,700	5,660	3,370	2,190	2,030	6,140
25	5,660	2,670	920	840	620	5,300	11,300	5,000	2,970	1,950	1,670	5,660
26	5,550	2,590	900	840	600	19,300	9,770	4,670	2,610	1,670	1,460	4,560
27	5,330	2,270	900	800	600	24,600	9,620	4,120	3,370	1,670	1,460	4,450
28	5,000	2,190	900	800	600	31,900	10,500	6,510	7,180	1,600	2,190	4,010
29	5,000	2,110	900	800	.....	37,200	11,600	7,040	7,460	1,600	3,680	3,680
30	4,560	2,110	900	800	.....	37,200	12,600	6,140	5,900	1,530	3,370	3,470
31	4,450	.....	900	700	.....	35,400	.....	4,670	.....	3,470	4,450	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	3,270	2,030	6,210	5,660	8,020	2,500	5,200	7,320	14,600	4,010	2,970	2,110
2	3,170	2,110	7,600	6,000	6,510	2,200	5,000	8,160	11,800	4,010	2,970	1,670
3	2,880	2,030	8,650	6,500	4,310	2,100	5,000	12,000	9,180	3,790	2,970	1,880
4	2,880	2,110	9,360	6,000	4,000	2,100	4,000	14,600	7,320	3,370	2,110	3,570
5	2,700	2,270	10,200	5,000	3,500	2,000	4,000	14,200	8,160	3,570	1,670	3,270
6	2,610	3,070	10,100	4,000	3,000	2,000	4,000	13,000	8,020	3,680	1,950	2,970
7	2,520	3,570	9,770	3,000	2,500	2,000	4,000	12,600	9,320	3,370	1,530	2,430
8	2,350	4,010	9,470	3,000	2,250	2,000	4,000	12,100	10,400	2,970	1,460	2,110
9	2,270	3,790	8,600	2,500	2,250	2,000	4,000	10,700	11,800	2,880	1,670	1,950
10	2,190	3,680	6,140	2,500	2,250	1,800	4,000	13,500	11,200	2,430	1,670	1,950
11	2,110	3,470	5,440	2,500	2,250	1,800	4,000	15,000	9,470	2,970	1,460	1,460
12	2,110	3,370	4,120	2,000	2,250	1,800	3,000	14,200	7,460	2,970	1,160	1,670
13	2,880	3,070	4,010	2,000	2,250	1,800	3,000	13,200	6,770	3,070	1,400	1,740
14	3,170	3,070	3,900	2,000	2,250	1,700	3,000	18,000	6,260	2,610	1,160	1,400
15	3,170	2,970	3,900	2,000	2,250	1,500	10,000	18,900	5,550	2,430	1,220	1,340
16	2,970	2,790	3,900	2,000	2,150	1,600	29,700	17,400	5,000	2,520	1,050	1,280
17	2,700	2,970	4,120	2,000	2,050	1,600	30,200	19,300	4,340	2,110	1,100	1,400
18	2,430	3,070	3,570	2,000	2,200	1,600	29,700	19,700	3,900	1,950	1,160	1,280
19	2,430	2,880	3,070	2,000	2,500	1,600	27,100	14,200	3,570	1,740	1,220	1,220
20	2,520	2,970	3,270	2,000	2,500	1,600	24,800	13,200	3,270	1,740	1,340	1,100
21	2,790	3,070	3,570	2,500	2,500	1,600	23,400	11,800	3,680	1,670	1,050	950
22	3,070	3,170	4,120	4,000	2,500	1,600	24,000	10,200	4,010	2,110	1,100	1,000
23	2,970	3,370	4,560	5,000	2,500	1,600	22,300	8,450	4,450	2,610	1,050	950
24	3,070	2,790	4,670	21,900	2,850	1,500	17,400	8,020	4,780	2,350	1,100	1,050
25	2,880	2,430	4,560	27,100	3,500	1,500	14,200	7,460	4,450	2,030	1,050	1,100
				24,600								
26	2,520	2,610	4,560		3,500	1,800	10,700	11,300	4,230	1,740	1,280	1,050
27	2,190	2,880	4,450	21,300	3,250	1,800	9,620	13,300	3,900	2,110	2,110	1,000
28	2,190	2,970	4,340	16,400	3,000	2,000	9,030	23,800	3,680	2,110	4,010	1,000
29	2,190	3,680	4,560	12,500	.....	5,000	8,160	27,600	3,370	1,740	3,470	1,050
30	2,190	5,200	4,670	10,100	.....	6,400	7,460	20,300	3,470	2,190	3,370	1,000
31	1,880	.....	6,140	8,880	.....	6,600	.....	18,200	.....	2,700	2,520	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	1,000	3,070	3,070	1,500	1,420	1,360	21,900	35,400	5,320	6,900	4,600	1,340
2	1,050	2,970	2,970	1,500	1,400	1,340	16,600	39,000	5,450	9,770	6,100	1,400
3	1,160	2,350	2,790	1,500	1,380	1,320	15,000	40,600	4,720	9,320	6,230	1,400
4	1,600	2,110	2,520	2,000	1,320	1,320	13,000	36,300	4,600	9,470	5,580	1,400
5	1,670	2,110	2,520	2,800	1,300	1,320	12,000	30,200	4,840	8,300	4,960	1,950
6	1,460	1,950	2,350	3,550	1,250	1,320	13,000	24,200	4,960	7,460	4,600	4,260
7	1,160	1,880	2,270	3,500	1,180	1,320	12,100	19,100	5,200	5,450	4,380	5,080
8	1,160	1,740	1,880	3,500	1,100	1,320	11,600	17,600	5,080	4,600	4,030	3,920
9	1,340	1,670	1,950	3,200	1,040	1,320	9,770	14,000	4,840	4,490	3,590	3,380
10	1,880	1,530	1,950	2,900	980	1,320	8,880	15,500	4,960	4,260	3,280	2,790
11	1,950	1,670	2,030	2,600	1,000	1,310	8,740	16,100	4,260	4,260	2,880	3,280
12	3,270	1,740	2,000	2,300	1,000	1,300	8,600	15,900	4,030	4,030	2,700	2,430
13	4,120	1,530	2,000	2,040	1,000	1,290	8,020	14,200	3,810	4,380	2,430	3,700
14	3,680	1,740	2,000	2,000	1,010	1,290	8,300	11,600	3,810	4,600	2,190	4,840
15	3,170	1,950	1,900	1,900	1,030	1,270	8,740	12,500	3,170	4,720	2,110	4,960
16	2,610	2,110	1,900	1,800	1,050	1,260	8,740	12,600	2,790	5,450	1,950	3,280
17	2,430	1,740	1,900	1,700	1,070	1,240	8,020	14,400	2,610	3,920	1,740	2,970
18	2,110	1,530	1,800	1,600	1,050	1,600	8,600	16,400	2,520	3,170	1,460	2,520
19	2,190	2,520	1,800	1,500	1,080	1,600	8,020	16,600	2,790	2,880	1,400	2,110
20	1,810	3,170	1,800	1,400	1,100	1,800	7,600	13,500	3,170	2,520	1,280	2,610
21	2,610	3,900	1,700	1,400	1,090	2,050	7,320	11,500	8,600	2,430	1,280	2,030
22	2,880	4,670	1,700	1,450	1,200	2,300	7,460	9,620	10,100	2,270	1,220	1,530
23	3,790	4,230	1,600	1,450	1,320	2,500	8,300	8,160	8,450	2,350	1,220	1,530
24	4,230	3,900	1,600	1,450	1,440	2,700	13,000	7,600	5,080	2,520	1,220	2,190
25	4,120	3,570	1,600	1,470	1,440	3,800	24,800	6,230	4,380	2,700	1,160	2,880
26	4,450	3,790	1,600	1,490	1,420	4,500	25,200	5,840	3,810	2,520	1,160	3,810
27	5,000	3,790	1,560	1,510	1,400	6,000	31,200	6,230	3,590	2,700	1,100	3,380
28	4,780	3,900	1,500	1,500	1,380	10,000	31,700	5,960	3,480	2,970	1,100	2,970
29	4,450	4,010	1,500	1,480	.....	15,000	32,300	6,100	4,600	3,380	1,050	3,070
30	4,230	3,370	1,500	1,460	.....	20,000	32,600	5,840	5,580	4,260	1,280	7,180
31	4,230	.....	1,500	1,440	.....	27,000	.....	5,320	.....	4,490	1,340	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	10,700	11,600	3,200	9,320	2,350	2,790	16,400	35,400	6,230	1,810	1,200	780
2	11,200	9,180	3,000	8,740	2,350	2,770	13,500	31,200	10,800	1,740	1,200	980
3	10,400	10,100	3,000	8,300	2,320	2,560	11,000	23,800	8,160	1,740	1,200	830
4	8,600	11,800	2,800	7,500	2,340	2,340	8,880	20,900	6,900	1,970	880	830
5	7,740	11,500	2,500	7,000	2,360	2,300	6,900	18,200	6,360	1,890	1,200	980
6	7,880	12,800	2,200	6,500	2,380	2,260	7,040	15,000	5,080	1,740	1,200	880
7	7,180	14,200	2,000	6,000	2,400	2,260	7,880	13,300	4,260	1,660	3,810	730
8	6,500	15,900	2,000	6,000	2,420	2,260	10,100	12,000	3,810	1,590	3,590	640
9	11,300	14,800	2,000	5,550	2,430	2,200	9,920	13,200	3,170	1,660	3,480	780
10	14,000	12,800	2,500	5,100	2,400	2,200	9,320	15,200	2,870	1,590	2,680	550
11	13,300	10,700	21,300	4,600	2,400	2,500	10,400	18,200	2,780	1,460	2,220	595
12	11,600	8,880	26,500	4,060	2,400	3,000	13,000	16,300	2,780	1,320	1,890	640
13	13,300	8,020	24,200	4,000	2,450	3,600	12,300	14,200	2,680	1,090	1,660	685
14	13,300	7,180	19,100	3,900	3,000	4,500	11,200	15,000	2,400	980	1,590	528
15	11,600	6,500	9,770	3,800	12,000	5,500	10,400	15,300	2,220	1,140	1,520	550
16	9,620	5,840	7,880	3,700	18,000	6,600	10,700	13,200	5,320	1,260	1,460	640
17	7,740	5,320	7,180	3,600	13,000	6,000	10,800	10,700	8,300	1,260	1,460	550
8	6,500	5,080	6,500	3,480	9,000	5,500	10,200	8,600	11,500	1,320	1,520	595
19	5,840	5,080	6,100	3,360	7,800	5,300	9,620	8,160	8,160	1,390	1,660	595
10	6,640	4,840	6,900	3,250	7,000	5,000	9,470	8,160	5,700	1,660	2,050	505
2												
21	4,960	4,600	7,320	3,200	6,200	4,700	9,180	7,880	4,260	2,310	2,050	385
22	5,450	4,380	7,880	3,100	5,500	4,500	9,320	6,900	3,170	2,220	1,890	595
23	4,380	4,490	8,160	2,950	4,620	4,300	9,470	6,640	2,780	2,050	1,660	505
24	4,140	4,380	12,800	2,800	4,400	6,900	9,920	6,230	2,680	1,740	1,460	425
25	3,920	4,380	18,000	2,600	4,100	10,000	11,000	5,700	2,220	1,590	1,200	550
26	3,700	4,490	16,300	2,430	4,000	14,000	14,000	5,200	2,050	1,390	1,260	595
27	3,590	4,260	15,200	2,450	3,900	18,000	19,700	5,450	1,890	1,200	1,200	465
28	3,810	3,920	11,800	2,400	3,500	23,400	22,100	5,700	1,740	1,140	1,200	288
29	14,400	3,810	10,700	2,400	3,100	26,500	34,900	5,580	1,660	1,200	1,090	550
30	18,700	3,480	10,100	2,400	.....	30,600	36,700	6,230	1,520	1,260	880	595
31	15,300	.....	9,920	2,350	.....	20,700	.....	5,960	.....	1,200	880	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	550	640	2,050	1,030	2,840	5,740	7,000	13,000	7,320	1,520	880	880
2	640	685	1,890	1,030	2,780	4,980	8,200	12,600	6,500	1,660	880	1,040
3	730	730	1,810	1,020	2,740	4,560	9,920	11,800	5,700	1,660	780	880
4	880	830	1,740	1,330	2,710	4,150	11,600	11,600	4,960	1,590	730	930
5	780	780	1,740	1,640	2,740	3,920	14,400	12,300	4,490	1,460	780	930
6	1,040	640	980	3,820	2,760	3,690	18,500	12,800	5,320	1,810	780	1,040
7	980	685	1,140	6,000	2,800	3,640	22,300	12,800	6,100	2,400	880	1,260
8	980	730	1,390	5,720	2,830	3,590	29,100	15,200	5,580	2,220	830	1,590
9	880	685	1,590	4,850	4,140	3,520	29,900	16,400	4,840	1,970	880	1,810
10	730	730	1,390	4,480	3,990	3,240	24,400	17,800	4,140	1,590	640	1,660
11	730	730	1,260	4,100	3,830	3,150	24,000	19,900	3,480	1,740	780	1,590
12	640	780	1,200	3,570	3,670	3,060	23,800	23,200	3,280	1,520	640	1,390
13	730	1,040	1,260	3,000	3,360	3,160	22,700	21,700	3,170	1,320	685	1,260
14	830	1,200	1,390	2,430	3,040	3,260	24,400	20,300	2,870	1,320	730	1,460
15	930	1,260	1,390	2,270	2,810	3,150	42,000	17,000	3,480	1,140	685	1,460
16	980	1,260	1,240	2,100	2,580	3,040	49,700	16,800	3,170	1,140	780	1,390
17	880	1,320	1,120	1,900	2,410	2,980	49,600	18,000	3,070	1,140	730	1,260
18	830	1,260	1,000	1,690	2,240	2,920	46,800	18,900	4,140	1,460	730	1,090
19	685	780	1,000	1,660	2,170	2,860	42,200	19,900	3,810	1,970	685	1,140
20	595	980	1,040	1,640	2,100	2,800	38,800	19,100	4,030	1,740	730	1,200
21	595	930	1,000	1,700	5,000	2,720	38,100	16,800	3,810	1,660	830	1,140
22	640	880	950	1,770	7,120	2,630	35,000	16,100	3,380	1,590	880	1,200
23	595	780	800	1,940	6,110	2,480	30,600	11,200	3,170	1,460	980	1,200
24	640	830	698	2,010	7,120	2,320	26,100	10,700	3,280	1,390	1,090	1,140
25	640	930	780	2,010	7,310	3,000	20,700	8,450	3,070	1,260	1,090	1,320
26	595	1,040	860	2,010	7,320	3,680	17,400	8,020	3,070	1,460	1,040	1,260
27	685	1,320	860	3,440	6,910	4,430	15,200	7,320	2,050	1,140	930	1,200
28	595	1,740	860	3,500	6,500	5,200	13,300	6,770	1,970	1,090	880	1,260
29	730	2,780	870	3,570	.....	5,400	13,700	8,740	1,740	980	930	3,380
30	730	2,140	890	3,230	.....	5,800	13,500	11,600	1,590	930	1,040	5,450
31	685	.....	950	2,890	.....	6,300	.....	9,620	.....	930	980	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	6,100	1,660	3,700	1,000	4,000	8,000	23,600	9,920	8,740	2,520	2,000	1,000
2	6,360	1,740	4,030	1,000	3,500	15,200	24,500	10,200	8,880	2,340	1,690	1,000
3	3,280	1,740	3,920	1,000	3,500	21,500	24,200	10,100	11,300	2,080	1,620	1,000
4	3,280	1,810	3,700	900	3,000	20,300	21,000	9,920	14,800	1,920	2,040	1,110
5	3,920	1,970	3,380	900	2,500	17,800	18,400	9,770	8,450	1,920	6,230	1,000
6	3,700	2,140	2,780	900	2,000	18,000	16,600	15,700	7,320	1,840	5,960	2,170
7	3,590	2,580	2,580	900	2,000	19,100	20,200	13,700	7,320	2,170	4,260	3,090
8	2,400	2,220	2,490	900	2,000	17,000	23,200	9,920	7,180	1,840	3,400	2,800
9	2,220	2,220	2,310	1,000	2,000	15,500	23,300	9,920	8,300	1,550	2,520	2,700
10	1,810	2,050	2,400	1,000	1,500	13,300	21,700	8,600	7,880	1,550	2,430	2,080
11	1,460	2,220	2,220	1,000	1,500	11,300	17,200	9,470	7,460	1,290	2,340	2,000
12	1,590	2,490	2,140	1,000	1,500	9,770	12,800	9,030	6,900	1,620	2,260	2,000
13	1,460	2,310	2,050	1,000	1,500	9,470	10,500	8,020	6,640	1,480	2,080	1,920
14	1,460	2,220	1,970	900	1,500	8,740	9,030	7,040	6,100	1,690	2,000	1,760
15	1,460	2,140	1,990	900	1,500	8,300	7,740	7,360	5,320	2,430	1,840	2,260
16	1,520	2,220	1,870	900	1,500	7,740	7,600	6,100	5,200	1,350	2,430	2,260
17	1,320	2,220	1,760	1,000	1,400	6,770	7,320	5,580	4,720	1,420	2,800	1,760
18	1,460	2,050	1,640	1,200	1,400	5,840	6,900	4,960	4,380	1,350	3,190	1,690
19	1,460	2,050	1,520	1,500	1,400	5,580	6,640	5,200	5,200	1,420	2,610	1,480
20	1,660	2,050	1,520	2,000	1,400	5,320	8,160	6,100	5,580	1,230	2,800	1,350
21	1,590	2,140	1,520	3,000	1,400	6,100	9,770	6,770	4,610	1,000	2,990	1,290
22	1,660	2,220	1,470	6,000	1,500	6,900	10,400	6,230	4,500	1,170	2,080	850
23	1,660	2,220	1,410	12,000	1,500	7,600	11,600	5,450	4,380	1,110	2,000	850
24	1,740	1,890	1,360	10,000	1,500	8,300	16,300	5,200	3,600	1,230	2,000	755
25	1,810	2,780	1,240	8,000	1,600	8,160	13,300	6,230	3,290	1,550	2,080	1,110
26	2,140	3,380	1,190	8,000	1,800	18,500	11,000	6,230	2,900	1,620	1,690	1,420
27	2,220	3,700	1,190	7,000	2,000	20,200	11,200	15,700	2,700	1,480	1,290	950
28	2,870	3,920	1,210	7,000	4,000	18,200	16,300	17,600	2,700	1,480	1,230	1,230
29	2,310	3,700	1,310	6,000	.....	17,500	13,900	15,000	2,700	1,480	1,170	3,710
30	1,810	3,380	1,260	5,000	.....	18,400	10,500	10,800	2,520	1,350	1,110	3,500
31	1,810	.....	1,020	4,000	.....	21,500	.....	10,700	.....	1,920	1,110	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	3,290	2,900	2,000	2,400	1,600	1,400	9,320	30,800	2,710	1,450	2,020	3,900
2	2,800	2,700	1,840	2,400	1,600	1,300	8,020	32,600	2,800	1,320	2,100	2,710
3	2,800	2,520	1,690	3,000	1,600	1,300	7,600	34,500	3,000	1,140	1,580	2,020
4	2,430	2,700	1,690	4,500	1,600	1,300	6,650	32,100	3,690	1,080	1,520	2,020
5	2,990	3,500	1,550	4,000	1,600	1,300	6,520	31,500	3,180	1,260	1,320	1,860
6	2,800	2,800	1,300	3,800	1,600	1,300	6,780	21,500	2,710	1,200	1,320	2,020
7	2,520	4,150	1,200	3,700	1,600	1,300	10,400	15,700	2,620	1,030	1,260	2,020
8	2,340	3,820	1,200	3,600	1,500	1,300	21,900	11,600	4,340	975	1,140	2,530
9	2,260	3,710	1,100	3,300	1,500	1,200	19,700	12,500	2,800	975	1,030	2,800
10	2,080	3,710	1,100	3,100	1,400	1,200	19,700	12,100	1,790	1,030	1,030	3,090
11	1,760	3,190	1,000	2,900	1,400	1,200	18,000	10,500	1,720	1,080	770	2,800
12	1,920	2,700	1,000	2,800	1,400	1,200	17,600	10,200	1,790	1,030	770	2,260
13	1,760	2,610	1,000	2,700	1,300	1,200	18,200	9,770	1,940	820	870	2,260
14	1,690	2,430	1,000	2,600	1,300	1,200	21,500	8,740	2,100	870	870	2,260
15	1,480	2,340	1,000	2,500	1,200	1,200	23,600	7,740	2,350	680	920	1,940
16	1,170	2,340	1,000	2,400	1,200	1,300	25,900	6,920	2,440	820	870	2,020
17	1,290	2,260	1,000	2,300	1,100	1,300	24,600	6,390	3,280	920	920	2,440
18	1,420	2,260	1,000	2,200	1,100	1,300	20,700	5,880	3,480	1,520	1,030	2,350
19	1,550	2,170	1,000	2,100	1,000	1,300	18,000	5,260	3,090	1,520	1,320	2,020
20	1,620	2,170	1,200	2,100	1,100	1,300	16,600	4,900	2,800	1,320	1,580	2,020
21	1,550	1,920	1,400	2,000	1,100	1,300	15,900	4,000	2,530	1,030	1,860	2,020
22	1,170	1,550	1,600	2,000	1,200	1,400	15,300	3,900	2,260	1,030	2,100	1,860
23	1,060	1,620	1,600	1,900	1,200	1,400	14,200	3,800	2,180	1,030	2,260	1,720
24	1,420	1,840	1,800	1,900	1,300	1,500	12,600	3,580	2,020	1,030	2,100	1,650
25	1,550	1,760	1,800	1,800	1,300	1,500	12,500	3,380	1,860	820	1,860	1,940
26	1,690	1,690	1,800	1,800	1,400	1,500	16,100	3,480	1,650	1,030	1,650	2,020
27	2,800	2,000	2,000	1,700	1,400	3,500	19,700	3,800	1,580	1,520	1,080	2,020
28	2,260	2,000	2,000	1,700	1,400	7,000	22,900	3,690	1,450	1,140	1,200	3,690
29	2,340	1,920	2,400	1,600	.....	10,400	25,900	3,580	1,520	1,320	2,350	3,380
30	2,700	2,000	2,800	1,600	.....	10,700	28,900	3,090	1,450	2,020	4,780	3,180
31	2,800	.....	3,000	1,600	.....	10,200	.....	2,900	.....	2,530	4,670	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	3,280	3,800	9,180	6,760	1,500	1,400	13,300	13,300	28,400	2,080	950	2,990
2	3,380	3,690	8,450	7,460	1,500	1,400	14,200	10,800	30,600	1,840	1,170	2,890
3	3,480	4,000	6,780	6,900	1,500	1,400	11,800	9,770	28,400	1,690	1,420	2,700
4	3,280	3,800	5,380	6,760	1,600	1,400	10,500	9,180	25,400	1,620	1,840	2,340
5	3,800	3,380	5,500	6,100	1,600	1,400	9,800	8,300	20,500	1,550	2,420	2,160
6	4,560	3,180	5,880	5,580	1,500	1,400	10,700	9,320	17,600	1,920	2,340	2,160
7	6,000	3,280	6,000	4,500	1,400	1,400	18,000	9,180	13,700	1,840	2,000	2,000
8	5,880	3,900	5,380	4,000	1,400	1,400	36,700	9,620	11,300	1,760	1,760	2,000
9	5,020	4,120	5,630	3,500	1,400	1,400	34,500	9,180	10,700	1,620	1,620	1,840
10	4,120	3,900	5,760	3,000	1,400	1,400	25,000	9,030	9,030	1,420	1,620	1,920
11	3,580	3,800	5,880	2,500	1,400	1,400	21,100	9,470	8,020	1,170	1,620	1,840
12	3,380	3,690	6,390	2,300	1,300	1,400	18,900	9,470	7,460	1,290	1,920	1,840
13	3,580	4,000	8,160	2,200	1,200	1,400	16,600	9,620	7,180	1,290	2,340	3,290
14	2,900	4,780	14,000	2,000	1,200	1,400	15,900	10,700	6,900	1,420	2,000	3,710
15	2,530	4,900	17,800	2,000	1,200	1,600	16,100	11,600	6,630	1,290	2,000	3,820
16	2,440	5,020	14,200	2,000	1,300	2,200	21,700	10,800	6,100	1,170	2,990	3,500
17	2,350	4,340	9,770	2,000	1,300	3,800	31,700	12,300	5,580	1,170	3,820	5,080
18	2,350	3,900	7,880	2,000	1,300	4,600	35,000	12,600	5,330	1,170	2,520	4,380
19	4,000	4,440	6,650	2,000	1,300	6,200	36,300	11,600	3,930	1,110	2,160	4,160
20	5,500	5,020	5,380	2,000	1,400	8,000	34,100	10,100	4,610	1,060	1,840	5,080
21	6,260	5,630	4,560	2,000	1,370	10,000	28,400	11,600	4,050	1,060	1,480	10,200
22	5,880	5,140	6,000	2,000	1,400	7,800	22,500	15,200	3,820	1,360	1,420	11,600
23	6,260	4,220	7,880	2,000	1,500	7,000	20,900	13,300	3,500	1,550	1,290	10,500
24	6,130	4,000	14,600	2,000	1,500	5,700	25,400	10,700	3,090	1,550	1,290	7,460
25	6,520	4,000	16,300	2,000	1,600	5,200	26,300	10,400	2,890	1,420	1,290	5,580
26	6,000	4,000	13,200	2,000	1,600	4,600	24,600	10,100	2,700	1,290	1,550	4,610
27	5,020	4,000	8,160	1,900	1,600	4,000	20,300	9,470	2,520	1,230	3,600	3,710
28	4,440	4,340	7,880	1,800	1,500	3,800	18,500	8,020	2,420	1,170	5,330	3,290
29	4,120	6,920	6,260	1,800	1,500	5,300	18,200	6,900	2,700	1,170	4,500	2,990
30	3,800	7,050	5,760	1,700	.....	7,600	16,400	12,800	2,160	1,060	3,500	3,500
31	3,800	.....	5,000	1,600	.....	12,100	.....	20,900	.....	850	3,090	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	5,080	3,930	3,290	6,220	7,880	4,000	25,200	8,880	12,800	2,110	2,650	1,360
2	5,330	4,160	3,290	6,100	7,740	3,800	23,200	7,740	9,920	1,790	2,290	1,220
3	4,840	4,160	4,380	5,960	6,630	3,600	18,500	7,320	8,020	1,790	2,110	980
4	4,050	3,930	6,360	9,030	6,220	3,500	15,500	6,900	7,040	1,360	1,950	880
5	3,710	3,930	8,020	9,180	5,580	3,500	18,900	6,360	6,360	1,220	1,950	980
6	3,500	3,710	7,180	7,740	4,960	3,000	20,900	6,220	5,580	1,570	1,870	830
7	3,090	3,500	7,460	8,020	4,380	2,500	18,900	6,220	5,080	1,500	1,790	780
8	2,790	9,030	7,460	8,020	4,160	2,200	14,600	5,580	4,840	1,500	2,290	780
9	2,600	11,300	6,360	7,740	4,050	1,800	11,800	5,080	5,080	1,500	1,950	880
10	2,700	12,600	5,460	6,630	3,710	1,420	10,100	4,610	5,080	1,500	1,950	685
11	2,700	10,100	5,460	5,330	3,710	5,000	9,470	4,160	4,610	1,500	1,360	618
12	2,700	7,740	5,580	5,960	3,400	5,000	9,770	4,050	4,050	1,600	1,430	730
13	2,790	6,360	6,360	6,630	3,500	9,000	9,470	4,050	3,930	1,600	1,360	640
14	2,700	6,100	6,100	6,360	3,500	12,000	11,000	4,050	3,490	1,800	1,360	640
15	3,090	6,700	6,220	6,630	3,400	15,000	11,300	3,930	3,160	2,000	1,430	550
16	3,500	6,700	6,700	6,360	3,500	27,600	12,000	3,930	3,160	2,000	1,160	640
17	3,500	6,700	6,360	6,360	3,400	27,600	12,300	3,930	3,270	2,110	1,430	730
18	2,890	5,460	5,460	8,600	3,290	22,500	12,600	3,930	3,490	2,110	1,220	685
19	2,700	5,080	5,330	13,300	3,290	18,200	11,800	4,040	3,710	2,290	1,160	730
20	2,520	4,610	6,630	14,400	3,190	18,200	12,300	4,380	3,380	2,290	980	685
21	2,520	4,380	6,360	15,500	3,290	23,400	12,000	4,610	3,050	2,290	780	780
22	2,700	4,160	5,580	15,200	3,710	30,600	11,300	4,380	2,850	2,470	830	880
23	2,890	4,380	4,380	14,000	4,500	29,900	10,800	5,330	2,470	2,290	780	1,790
24	6,360	4,610	4,160	13,700	5,500	25,400	10,500	10,100	2,290	1,950	595	2,470
25	8,880	4,840	4,050	12,600	5,000	26,500	10,100	12,600	2,030	1,710	780	2,650
26	7,740	4,720	3,930	9,620	4,500	38,900	11,000	11,000	1,870	1,640	1,040	2,850
27	6,630	4,610	3,930	9,030	4,000	47,600	12,000	8,600	1,950	1,950	980	2,110
28	5,960	4,380	3,930	8,020	3,500	56,000	11,600	7,180	2,110	2,380	780	1,640
29	5,330	3,710	3,820	6,900	.....	49,600	10,700	10,400	3,050	4,960	980	1,570
30	4,610	3,500	3,930	5,840	.....	39,400	10,200	15,700	2,470	4,380	780	1,100
31	4,050	.....	5,330	6,100	.....	29,700	.....	14,000	.....	3,600	1,100	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	1,500	6,100	2,850	1,360	1,950	1,100	11,200	24,200	3,270	1,500	1,360	2,650
2	930	5,200	3,050	1,290	2,030	2,290	16,800	19,100	3,050	1,790	1,640	2,470
3	1,100	4,050	3,160	1,220	1,640	5,960	20,100	16,800	3,270	2,470	1,160	2,110
4	1,500	3,930	3,270	1,360	1,790	7,740	16,800	15,900	3,270	3,050	1,220	1,870
5	1,710	3,380	3,490	1,790	1,870	7,040	12,600	17,800	4,500	2,950	1,430	1,640
6	2,110	3,270	3,270	1,640	1,790	5,700	9,030	20,300	4,840	2,850	1,790	1,790
7	2,110	3,050	3,270	1,500	1,640	4,840	6,630	20,700	4,040	2,850	2,030	1,790
8	1,950	3,050	3,270	1,360	1,500	4,260	6,500	19,300	3,490	2,290	1,950	1,640
9	1,640	3,160	4,160	1,500	1,500	3,710	13,500	17,800	3,270	1,950	1,290	1,790
10	1,220	5,330	5,330	1,640	1,500	3,270	16,800	18,200	2,950	2,380	1,220	1,570
11	1,360	7,040	6,900	1,500	1,220	2,856	14,600	17,800	2,470	2,650	1,360	1,360
12	1,640	6,360	6,760	1,430	1,040	2,650	15,000	16,600	2,110	2,470	1,290	1,790
13	2,030	5,080	6,630	1,160	980	2,380	15,200	14,400	1,950	2,200	1,500	1,790
14	2,290	4,610	6,360	1,100	980	2,290	12,500	11,600	1,790	2,290	1,500	1,640
15	2,290	3,820	5,840	1,160	880	2,200	10,800	10,100	1,640	2,560	1,430	1,500
16	2,290	3,270	5,330	1,160	930	2,290	10,800	8,740	1,500	2,110	1,290	1,430
17	2,110	3,050	4,960	1,220	980	2,560	10,500	7,880	1,570	1,790	980	1,290
18	2,110	3,050	4,500	1,290	930	3,600	11,000	7,180	1,570	1,570	1,040	1,040
19	2,110	2,850	4,050	1,290	980	4,260	14,600	6,900	1,570	1,710	1,100	980
20	2,110	2,950	3,490	1,290	980	4,150	27,400	6,760	1,570	1,640	1,100	1,220
21	4,050	4,500	3,160	1,290	980	3,600	42,000	6,360	1,790	1,500	1,220	1,160
22	5,200	6,360	2,950	1,220	930	3,380	44,300	5,840	1,950	1,570	1,220	980
23	4,840	5,840	2,650	1,220	1,040	3,050	40,100	5,580	1,790	1,500	1,360	980
24	3,930	4,720	2,470	1,220	980	2,750	32,300	5,080	1,790	1,500	1,500	1,100
25	3,270	4,160	2,290	1,220	1,040	2,560	22,300	4,720	1,790	1,360	1,500	980
26	4,160	4,040	2,030	1,360	980	2,650	16,600	4,840	1,640	1,220	1,640	1,160
27	6,630	3,710	1,870	1,360	930	4,500	17,600	4,840	1,500	1,100	1,360	1,360
28	8,600	3,270	1,950	1,640	980	9,770	18,400	4,610	1,640	1,160	930	1,710
29	7,740	3,050	1,640	1,640	.....	11,300	19,300	4,380	1,710	1,100	980	1,790
30	6,360	2,850	1,570	1,790	.....	11,800	24,200	3,930	1,500	1,360	1,640	1,790
31	6,100	.....	1,500	1,950	.....	11,600	.....	3,490	.....	1,570	2,560	.....

Daily discharge, in second-feet, of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	2,030	1,500	4,610	880	1,040	18,200	2,030	12,000	2,850	2,470	6,360	2,470
2	2,110	1,790	4,380	880	730	13,000	2,200	11,800	2,290	3,490	5,460	2,290
3	1,790	1,950	4,840	880	730	10,700	2,290	10,200	2,030	3,930	6,100	2,110
4	1,640	2,290	6,100	880	730	8,880	2,290	8,740	2,030	4,050	5,330	1,950
5	1,640	2,560	6,630	880	730	8,020	2,380	7,460	1,950	4,040	4,840	1,790
6	1,500	3,050	5,840	730	730	7,320	2,560	6,760	1,950	4,160	3,930	1,790
7	1,290	3,490	4,840	1,100	880	6,900	2,750	5,840	1,640	4,380	3,490	1,640
8	1,040	3,710	4,050	3,050	1,430	6,760	2,950	5,700	1,360	4,380	3,050	1,430
9	1,100	3,710	3,490	3,930	1,430	6,360	4,040	6,630	1,500	11,800	3,600	1,430
10	1,360	3,270	3,160	3,050	1,290	5,960	5,840	6,630	1,430	21,900	5,080	1,500
11	1,220	3,270	2,850	2,850	1,100	5,200	10,800	6,220	1,430	20,100	8,600	1,870
12	1,100	3,270	2,380	2,560	880	4,610	19,300	5,330	1,790	14,000	9,770	2,380
13	1,220	3,050	1,950	2,110	780	4,610	23,800	4,960	2,470	8,740	8,160	2,560
14	1,500	2,850	2,110	1,790	730	4,720	21,700	4,380	2,470	5,840	6,100	2,380
15	1,710	2,850	1,950	1,430	980	4,610	18,400	3,930	2,110	4,610	5,080	2,110
16	1,640	3,270	1,870	1,290	1,500	4,380	13,300	3,710	2,030	3,930	4,160	1,790
17	1,360	3,820	1,640	1,100	2,560	4,040	10,800	3,380	1,950	3,710	4,380	1,570
18	1,430	4,960	1,500	1,290	2,950	3,270	10,400	3,270	3,050	4,050	4,380	1,360
19	2,030	4,610	1,160	2,560	2,950	2,950	9,620	3,160	4,380	8,020	4,050	1,360
20	3,270	3,490	1,040	5,580	2,950	2,950	9,320	3,050	5,200	8,600	3,820	1,570
21	3,600	3,380	1,100	5,450	2,750	3,270	9,030	2,950	4,380	6,900	3,160	1,790
22	3,490	2,850	1,100	4,050	2,560	3,490	8,160	2,950	3,710	6,360	2,850	2,750
23	3,270	3,270	1,100	3,600	2,380	3,270	7,180	3,050	3,050	7,180	3,930	5,080
24	3,050	3,050	1,040	2,950	2,380	3,600	6,100	2,850	2,650	6,900	5,960	5,840
25	2,650	2,850	930	2,470	11,300	3,930	6,630	2,470	2,470	5,580	6,100	4,840
26	2,750	2,850	880	2,200	33,700	4,840	10,800	2,650	2,110	4,610	6,100	3,820
27	1,950	3,270	930	1,950	31,000	5,080	14,400	3,050	1,950	4,720	5,580	3,270
28	1,640	3,710	1,040	1,640	24,200	4,050	15,000	3,820	1,950	6,630	4,610	3,600
29	1,640	4,380	930	1,570	.....	3,050	12,600	4,380	1,950	6,630	3,600	4,050
30	1,640	4,610	1,040	1,290	.....	2,290	10,700	3,710	1,790	7,180	3,050	3,930
31	1,500	.....	1,040	1,040	.....	2,110	.....	3,270	.....	8,020	2,650	.....

NOTE.—Discharge determined from a well-defined rating curve, the low-water part of which has been changed somewhat for certain periods to allow for slightly shifting control.

Discharge relation affected by ice: Dec. 30, 1900, to Mar. 24, 1901; Dec. 4–11, 1901; Dec. 24, 1901, to Feb. 26, 1902; Dec. 5, 1902, to Feb. 28, 1903; Dec. 15, 1903, to Mar. 28, 1904; Nov. 17, 1904, to Mar. 25, 1905; Nov. 30 to Dec. 5, 1905, Jan. 2–23, 1906; Feb. 3 to Apr. 15, 1906; Dec. 12, 1906, to Mar. 30, 1907; Dec. 1–10, 1907; Jan. 4 to Mar. 27, 1908; Dec. 16, 1908, to Apr. 2, 1909; Dec. 15, 1909, to Mar. 1, 1910; Dec. 6, 1910, to Mar. 28, 1911; Dec. 31, 1911, to Apr. 7, 1912; Feb. 23 to Mar. 15, 1913; Dec. 21, 1913, to Apr. 4, 1914; and Dec. 14, 1914, to Feb. 25, 1915. Daily discharge for these periods estimated from gage heights, discharge measurements, and weather records. Discharge interpolated July 12–16, 1913.

Monthly discharge of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915.

[Drainage area, 3,100 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1900.						
August 6–31	5,110	950	2,270	0.732	0.71	B.
September	2,520	815	1,300	.419	.47	B.
1900–1901.						
October	12,600	1,880	4,400	1.42	1.64	A.
November	16,300	1,600	7,560	2.44	2.72	A.
December	6,900	4,010	5,170	1.67	1.92	B.
January	5,500	2,400	2,930	.945	1.09	D.
February	2,500	1,900	2,220	.716	.75	D.
March	21,300	1,800	5,400	1.74	2.01	D.
April	32,600	11,000	23,200	7.48	8.34	B.
May	16,300	5,550	9,030	2.91	3.36	A.
June	7,600	2,610	5,240	1.69	1.89	A.
July	8,450	1,280	3,300	1.07	1.23	A.
August	6,640	1,100	3,690	1.19	1.37	A.
September	2,110	1,100	1,580	.510	.57	B.
The year	32,600	1,100	6,150	1.98	26.89	

Monthly discharge of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1901–2.						
October	5,220	1,340	2,250	0.726	0.84	A.
November	2,350	1,280	1,710	.552	.62	B.
December	30,400	1,460	6,600	2.13	2.46	D.
January	6,000	2,700	3,810	1.23	1.28	D.
February	8,000	2,000	2,810	.906	1.04	D.
March	43,400	9,770	20,500	6.61	7.62	B.
April	23,200	8,600	13,000	4.19	4.68	A.
May	31,900	4,560	10,600	3.42	3.94	A.
June	17,000	4,890	9,590	3.09	3.45	A.
July	6,770	2,520	4,250	1.37	1.58	A.
August	8,300	2,190	4,390	1.42	1.64	A.
September	5,330	2,030	3,430	1.11	1.24	A.
The year	43,400	1,280	6,950	2.24	30.39	
1902–3.						
October	19,700	2,350	4,420	1.43	1.65	A.
November	10,100	3,470	4,990	1.61	1.80	B.
December	3,560	2,580	2,930	.945	1.09	C.
January	3,560	2,260	2,840	.916	1.06	C.
February	4.170	2,720	3,320	1.07	1.11	C.
March	40,100	11,500	24,300	7.84	9.04	B.
April	22,900	5,110	11,100	3.58	3.99	A.
May	5,780	1,460	3,340	1.08	1.24	A.
June	7,740	1,100	3,090	.997	1.11	A.
July	4,010	1,400	2,310	.745	.86	A.
August	3,470	1,280	2,120	.684	.79	A.
September	2,030	640	1,100	.355	.40	B.
The year	40,100	640	5,510	1.78	24.14	
1903–4.						
October	2,030	860	1,300	.419	.48	B.
November	2,110	1,050	1,480	.477	.53	B.
December	2,800	1,040	1,540	.497	.57	C.
January	980	650	785	.253	.29	C.
February	1,220	700	830	.268	.29	C.
March	21,700	1,160	5,240	1.69	1.95	B.
April	22,100	6,640	12,800	4.13	4.61	A.
May	23,600	6,260	14,400	4.65	5.36	A.
June	6,260	1,400	3,010	.971	1.08	A.
July	2,350	815	1,420	.458	.53	B.
August	4,780	905	1,980	.639	.74	B.
September	7,460	1,280	3,690	1.19	1.33	A.
The year	23,600	650	4,050	1.31	17.76	
1904–5.						
October	10,800	3,270	5,550	1.79	2.06	A.
November	3,790	1,750	2,570	.829	.92	C.
December	2,110	900	1,210	.390	.45	C.
January	1,070	700	868	.280	.32	C.
February	760	600	681	.220	.23	C.
March	37,200	560	7,110	2.29	2.64	C.
April	33,200	7,040	13,400	4.32	4.82	A.
May	13,000	4,120	8,400	2.71	3.12	A.
June	7,460	2,610	4,180	1.35	1.51	A.
July	17,600	1,530	4,390	1.42	1.64	A.
August	7,320	1,460	3,430	1.11	1.28	A.
September	10,400	2,520	5,410	1.75	1.95	A.
The year	37,200	560	4,780	1.54	20.94	
1905–6.						
October	3,270	1,880	2,620	.845	.97	A.
November	5,200	2,030	3,050	.984	1.10	B.
December	10,200	3,070	5,660	1.83	2.11	C.
January	27,100	2,000	7,060	2.28	2.63	C.
February	8,020	2,050	3,030	.977	1.02	C.
March	6,600	1,500	2,240	.723	.83	C.
April	30,200	3,000	11,800	3.81	4.25	C.
May	27,600	7,320	14,200	4.58	5.28	A.
June	14,600	3,270	6,580	2.12	2.36	A.
July	4,010	1,670	2,630	.848	.98	A.
August	4,010	1,050	1,790	.577	.67	B.
September	3,570	950	1,600	.516	.58	B.
The year	30,200	950	5,200	1.68	22.78	

Monthly discharge of Connecticut River at Orford, N. H., for the years ending Sept. 30, 1900–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1906–7.						
October	5,000	1,000	2,760	0.890	1.03	A.
November	4,670	1,530	2,670	.861	.96	A.
December	3,070	1,500	1,960	.632	.73	B.
January	3,550	1,400	1,960	.632	.73	C.
February	1,440	980	1,190	.384	.40	C.
March	27,000	1,240	3,970	1.28	1.48	C.
April	32,600	7,320	14,400	4.65	5.19	B.
May	40,600	5,320	15,900	5.13	5.91	B.
June	10,100	2,520	4,690	1.51	1.68	A.
July	9,770	2,270	4,600	1.48	1.71	A.
August	6,230	1,050	2,600	.839	.97	A.
September	7,180	1,340	3,010	.971	1.08	A.
The year	40,600	980	4,990	1.61	21.87	
1907–8.						
October	18,700	3,590	8,940	2.88	3.32	A.
November	15,900	3,480	7,810	2.52	2.81	A.
December	26,500	2,000	9,320	3.01	3.47	C.
January	9,320	2,350	4,410	1.42	1.64	C.
February	18,000	2,320	4,830	1.56	1.68	C.
March	30,600	2,200	7,580	2.45	2.82	C.
April	36,700	6,900	12,800	4.13	4.61	B.
May	35,400	5,200	12,700	4.10	4.73	B.
June	11,500	1,520	4,450	1.44	1.61	A.
July	2,310	980	1,530	.494	.57	B.
August	3,810	880	1,690	.545	.63	B.
September	980	288	627	.202	.23	B.
The year	36,700	288	6,400	2.06	28.12	
1908–9.						
October	1,040	550	747	.241	.28	B.
November	2,780	640	1,040	.335	.37	B.
December	2,050	698	1,200	.387	.45	B.
January	6,000	1,020	2,690	.868	1.00	C.
February	7,320	2,100	4,000	1.29	1.34	C.
March	6,300	2,320	3,620	1.17	1.35	C.
April	49,700	7,000	25,400	8.19	9.14	C.
May	23,200	6,770	14,400	4.65	5.36	B.
June	7,320	1,590	3,890	1.25	1.40	A.
July	2,400	930	1,490	.481	.55	B.
August	1,090	640	836	.270	.31	B.
September	5,450	880	1,460	.471	.53	B.
The year	49,700	550	5,050	1.63	22.08	
1909–10.						
October	6,360	1,320	2,360	.761	.88	A.
November	3,920	1,660	2,380	.768	.86	A.
December	4,030	1,020	2,070	.668	.77	B.
January	12,000	900	3,130	1.01	1.16	C.
February	4,000	1,400	2,000	.645	.67	C.
March	21,500	5,320	12,800	4.13	4.76	B.
April	24,500	6,640	14,500	4.68	5.22	B.
May	17,600	4,960	9,080	2.93	3.38	A.
June	14,800	2,520	6,050	1.95	2.18	A.
July	2,520	1,000	1,630	.526	.61	A.
August	6,230	1,110	2,430	.784	.90	A.
September	3,710	755	1,740	.561	.63	A.
The year	24,500	755	5,020	1.62	22.02	
1910–11.						
October	3,290	1,060	2,040	.658	.76	A.
November	4,150	1,550	2,510	.810	.90	A.
December	3,000	1,000	1,520	.490	.56	C.
January	4,500	1,600	2,520	.813	.94	C.
February	1,600	1,000	1,360	.439	.46	C.
March	10,700	1,200	2,450	.790	.91	C.
April	28,900	6,520	16,800	5.42	6.05	B.
May	34,500	2,900	11,300	3.65	4.21	A.
June	4,340	1,450	2,440	.787	.88	A.
July	2,530	680	1,180	.381	.44	B.
August	4,780	770	1,620	.523	.60	B.
September	3,900	1,650	2,360	.761	.85	A.
The year	34,500	680	4,010	1.29	17.56	

Monthly discharge of Connecticut River at Orford, N. H., for the years ending Sep 30, 1900–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1911–12.						
October	6,520	2,350	4,310	1.39	1.60	A.
November	7,050	3,180	4,340	1.40	1.56	A.
December	17,800	4,560	8,250	2.66	3.07	A.
January	7,460	1,600	3,110	1.00	1.15	C.
February	1,600	1,200	1,420	.458	.49	C.
March	12,100	1,400	3,840	1.24	1.43	C.
April	36,700	9,800	21,800	7.03	7.84	C.
May	20,900	6,900	10,800	3.48	4.01	A.
June	30,600	2,160	9,570	3.09	3.45	A.
July	2,080	850	1,390	.448	.52	B.
August	5,330	950	2,220	.716	.83	A.
September	11,600	1,840	4,100	1.32	1.47	A.
The year	36,700	850	6,250	2.02	27.42	
1912–13.						
October	8,880	2,520	4,010	1.29	1.49	A.
November	12,600	3,500	5,640	1.82	2.03	A.
December	8,020	3,290	5,450	1.76	2.03	B.
January	15,500	5,330	8,740	2.82	3.25	B.
February	7,880	3,190	4,410	1.42	1.48	C.
March	56,000	1,420	18,900	6.10	7.03	C.
April	25,200	9,470	13,300	4.29	4.79	B.
May	15,700	3,930	6,750	2.18	2.51	A.
June	12,800	1,870	4,340	1.40	1.56	A.
July	4,960	1,220	2,090	.674	.78	A.
August	2,650	595	1,390	.448	.52	B.
September	2,850	550	1,130	.365	.41	B.
The year	56,000	550	6,370	2.05	27.88	
1913–14.						
October	8,600	930	3,130	1.01	1.16	A.
November	7,040	2,850	4,170	1.35	1.51	A.
December	6,900	1,500	3,680	1.19	1.37	A.
January	1,950	1,100	1,390	.448	.52	B.
February	2,030	880	1,250	.403	.42	B.
March	11,800	1,100	4,580	1.48	1.71	C.
April	44,300	6,500	18,300	5.90	6.58	C.
May	24,200	3,490	11,300	3.65	4.21	A.
June	4,840	1,500	2,360	.761	.85	A.
July	3,050	1,100	1,940	.626	.72	A.
August	2,560	930	1,410	.455	.52	B.
September	2,650	980	1,550	.500	.56	B.
The year	44,300	880	4,600	1.48	20.13	
1914–15.						
October	3,600	1,040	1,910	.616	.71	C.
November	4,960	1,500	3,230	1.04	1.16	B.
December	6,630	880	2,500	.806	.93	B.
January	5,580	730	2,160	.697	.80	B.
February	33,700	730	4,910	1.58	1.64	B.
March	18,200	2,110	5,560	1.79	2.06	A.
April	23,800	2,030	9,250	2.98	3.32	A.
May	12,000	2,470	5,110	1.65	1.90	A.
June	5,200	1,360	2,400	.774	.86	A.
July	21,900	2,470	7,000	2.26	2.61	A.
August	9,770	2,650	4,950	1.60	1.84	A.
September	5,840	1,360	2,540	.819	.91	A.
The year	33,700	730	4,290	1.38	18.74	

Days of deficiency in discharge of Connecticut River at Orford, N. H., during the years ending Sept. 30, 1901–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.														
		1900–1901	1901–2	1902–3	1903–4	1904–5	1905–6	1906–7	1907–8	1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15
500	56.8	.....	.....	.....	.....	.....	.....	.....	4	.....	.....	.....	.....	.....	.....	.....
1,000	114	.....	.....	17	72	85	2	1	34	94	12	15	2	30	22	20
1,500	170	19	18	40	158	104	35	80	61	158	75	110	58	47	83	57
2,000	227	55	47	69	233	121	71	135	86	192	132	179	99	74	166	102
2,500	284	100	88	104	252	141	131	164	126	209	188	236	133	96	197	137
3,000	341	144	121	183	259	171	178	197	144	228	207	270	146	114	217	171
3,500	398	166	149	233	265	202	213	215	159	253	218	287	159	134	248	210
4,000	455	180	163	250	273	220	233	236	175	268	233	304	186	168	256	236
4,500	512	210	177	268	280	241	260	258	191	277	239	308	206	194	268	259
5,000	568	216	206	277	284	251	267	276	199	283	243	312	216	209	282	277
6,000	682	255	235	298	293	273	278	291	221	295	256	314	245	238	295	298
7,000	796	280	254	306	302	289	289	298	243	304	276	319	267	271	310	319
8,000	909	291	263	309	309	304	295	304	258	307	289	322	278	284	316	324
9,000	1,020	301	272	313	317	307	305	319	271	311	303	324	285	293	318	334
10,000	1,140	310	283	313	329	317	313	324	285	313	314	326	302	308	320	338
15,000	1,700	330	318	331	345	352	341	340	334	328	334	338	332	339	336	354
20,000	2,270	341	348	346	361	357	350	350	352	343	353	350	344	348	354	358
25,000	2,840	355	355	350	366	359	359	354	359	353	365	357	352	352	360	363
30,000	3,410	361	360	356	.....	359	364	356	361	356	.....	360	359	359	361	363
35,000	3,980	365	362	361	.....	362	365	361	365	357	.....	365	363	360	362	365
40,000	4,550	.....	364	364	.....	365	.....	364	366	360	.....	.....	366	362	362	.....
45,000	5,120	.....	365	365	.....	.....	.....	365	.....	362	.....	.....	.....	362	365	.....
50,000	5,680	.....	.....	.....	.....	.....	.....	.....	.....	365	.....	.....	.....	364	.....	.....
60,000	6,820	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	365	.....	.....

NOTE.—The above table gives the theoretical horsepower per foot of fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

CONNECTICUT RIVER AT SUNDERLAND, MASS.

LOCATION.—At the five-span steel highway bridge at Sunderland, about 18 miles in a direct line and 24 miles by river above the dam at Holyoke. Deerfield River enters the Connecticut from the west about 8 miles above the station.

RECORDS AVAILABLE.—April 1, 1904, to September 30, 1915.

DRAINAGE AREA.—8,000 [1] square miles.

GAGE.—Chain on downstream side of bridge.

DISCHARGE MEASUREMENTS.—Made from the bridge.

CHANNEL AND CONTROL.—Channel deep, bottom of coarse gravel and alluvium. Control at low stages not well defined but practically permanent; at high stages it is evidently the crest of the dam at Holyoke.

EXTREMES OF DISCHARGE.—Maximum stage during 1904–1915, 30.7 feet during the night of March 28, 1913 (see fig. 5) (determined by leveling from flood-marks) (approximate discharge computed from extension of rating curve, 101,000 second-feet). Minimum stage recorded, 0.6 foot September 28 and November 8, 1914 (approximate discharge computed from extension of rating curve, 700 second-feet.)

WINTER FLOW.—Discharge relation seriously affected by ice for several months.

REGULATION.—Flow affected by operation of various power plants on the main river and tributaries above the station. The effect of the regulation is shown by low water at the gage on Sundays and Mondays.

ACCURACY.—Gage read twice each day; record good.

[1] Remeasured since published in previous reports.

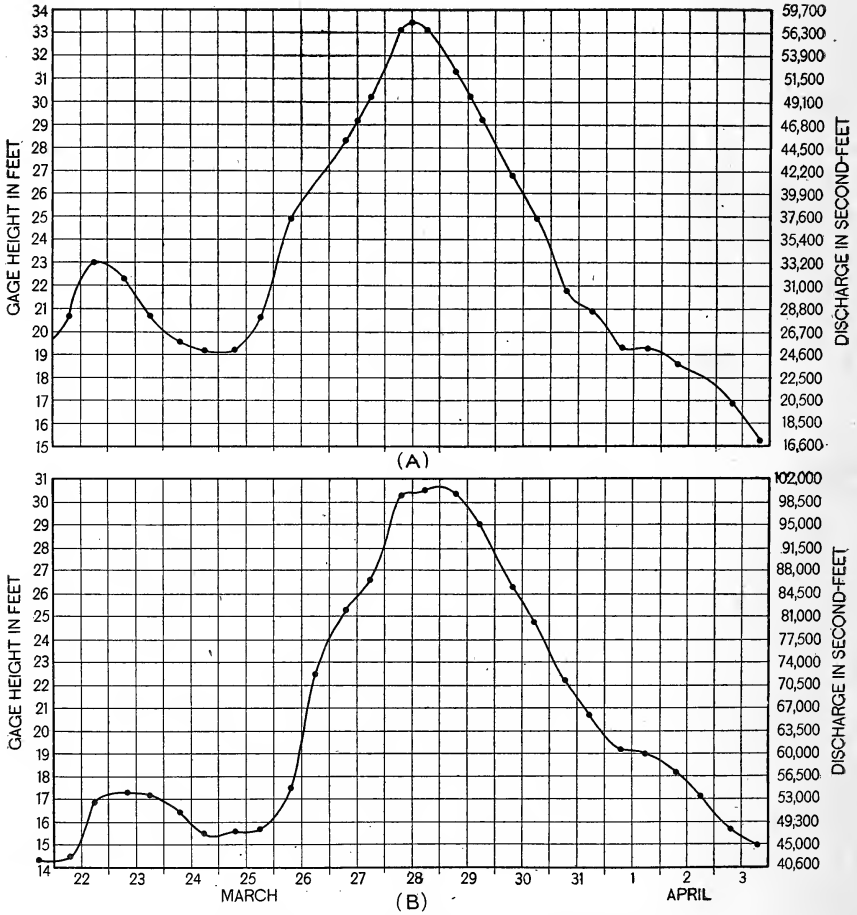


FIGURE 5.—Hydrographs of Connecticut River: (A) Orford, N. H.; (B) Sunderland, Mass.; March 22 to April 3, 1913.

Discharge measurements of Connecticut River at Sunderland, Mass., during 1904–1915.

Date.	Made by—	Gage height.	Discharge.
1904.		*Feet.*	*Sec.-ft.*
Apr. 12	S. K. Clapp	17.65	55,000
26	do	12.15	34,500
May 17	do	10.17	25,800
June 2	do	5.45	10,100
21	do	3.45	5,300
July 29	do	2.55	3,660
Aug. 18	do	2.60	3,390
Oct. 28	T. W. Norcross	6.48	13,000
Dec. 1	do	4.63	[a] 4,710
1905.			
Apr. 3	T. W. Norcross	20.11	60,600
6	do	15.26	44,600
14	do	14.57	41,600
27	do	9.28	22,800
May 18	do	7.67	16,100
Aug. 18	do	7.46	14,700
Sept. 1	do	4.75	7,240
9	do	8.01	15,600
1906.			
Apr. 25	T. W. Norcross	14.54	40,400
Aug. 9	G. M. Brett	4.04	5,320
Oct. 6	F. E. Pressy	2.05	2,030
1907.			
Apr. 6	R. A. Mention	12.23	30,800
25	Wood and Mention	14.65	44,400
Sept. 25	D. M. Wood	5.55	9,820
1908.			
Mar. 1	D. M. Wood	[b] 15.60	9,340
Apr. 1	do	16.10	50,300
Sept. 22	do	1.34	1,660
Dec. 29	do	[b] 2.87	2,360
1909.			
Jan. 23	D. M. Wood	[b] 7.77	4,430
Feb. 11	do	[b] 10.30	11,400
1909.			
Mar. 3	D. M. Wood	[b] 11.00	15,300
June 3	do	6.88	13,300
July 16	do	2.53	2,940
Oct. 13	do	3.02	3,660
Dec. 21	F. F. Henshaw	[b] 4.45	4,430
1910.			
Feb. 15	D. M. Wood	[b] 5.86	5,580
Mar. 9	do	14.55	41,700
Sept. 15	W. G. Hoyt	3.26	4,230
1911.			
Apr. 13	W. G. Hoyt	12.06	33,000
29	C. S. De Golyer	15.80	48,700
1912.			
Feb. 12	G. H. Canfield	[b] 4.39	3,130
13	do	[b] 5.19	4,310
1913.			
Aug. 10	C. H. Pierce	2.54	2,940
1914.			
Jan. 17	R. S. Barnes	[b] 4.20	4,700
Mar. 5	Pierce and Barnes	[b] 13.42	26,400
Apr. 30	do	18.69	58,400
Aug. 20	C. H. Pierce	2.22	2,530
Nov. 2	R. S. Barnes	1.10	1,180
Dec. 22	do	[b] 3.60	2,760
1915.			
Jan. 9	R. S. Barnes	[b] 5.88	5,780
Feb. 7	do	[b] 6.45	7,800
24	do	[b] 7.15	9,040
27	do	21.27	68,600
28	do	17.50	55,100
Sept. 25	Hardin Thweatt	4.48	7,050

[a] Results uncertain.

[b] Discharge relation affected by ice.

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1904.							1904.						
1	35,200	62,200	12,600	6,300	5,040	4,490	16	31,200	23,400	7,220	3,720	2,310	20,800
2	42,800	55,600	10,200	7,820	4,080	4,080	17	27,200	26,100	6,760	3,720	3,460	15,500
3	43,800	49,500	10,200	7,820	3,810	3,630	18	25,500	29,200	6,300	4,180	3,540	14,000
4	37,300	45,300	9,800	6,760	4,380	3,210	19	26,500	33,700	5,150	4,000	3,720	12,800
5	32,200	41,500	9,160	5,960	4,490	3,140	20	26,100	43,400	4,490	4,080	4,380	10,600
6	32,800	37,300	8,660	5,840	4,180	4,000	21	24,000	45,100	4,710	3,900	9,280	8,660
7	35,200	33,900	10,200	5,610	4,080	4,000	22	22,900	40,900	4,930	3,460	8,910	8,060
8	39,800	30,700	11,900	5,610	3,900	6,070	23	23,100	34,800	4,490	3,290	9,160	9,160
9	47,800	27,600	16,400	5,380	2,980	6,180	24	24,000	28,400	4,380	2,500	8,910	10,200
10	57,300	26,700	18,200	5,150	3,720	5,610	25	27,200	23,400	4,280	3,290	9,160	9,410
11	58,200	26,900	14,200	4,600	4,380	5,150	26	33,700	21,200	4,180	3,460	8,180	9,040
12	54,400	29,200	11,000	4,380	4,080	4,600	27	38,100	20,400	4,280	3,210	7,700	11,900
13	49,100	29,500	9,280	3,720	3,140	4,280	28	48,700	18,600	4,080	3,370	6,760	12,800
14	43,400	27,100	8,910	4,000	3,060	4,080	29	68,500	16,100	4,380	3,540	5,500	12,800
15	36,800	23,100	7,940	3,720	2,910	13,700	30	69,000	14,700	4,710	3,720	4,930	14,400
							31		14,200		4,280	4,710	

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.										
1	19,300	10,600	7,940	.....	87,900	21,600	8,660	11,600	26,100	7,140
2	18,600	9,670	7,940	.....	75,000	21,700	7,630	9,470	20,800	10,200
3	19,300	9,280	9,280	.....	60,900	20,800	6,780	7,380	16,800	15,900
4	18,900	8,910	10,200	.....	51,300	19,900	6,320	13,300	15,200	33,000
5	16,800	8,660	8,660	.....	44,300	19,000	6,210	21,600	12,200	40,900
6	14,500	8,300	8,180	.....	44,300	19,600	6,900	21,200	9,060	34,100
7	12,300	7,700	8,420	.....	48,000	20,500	7,140	16,600	7,760	27,100
8	10,800	8,060	8,180	.....	42,800	20,600	8,930	12,200	7,630	21,700
9	9,670	7,460	8,180	.....	36,500	20,100	9,750	9,340	6,780	17,600
10	9,160	7,220	7,700	.....	33,200	19,000	8,930	7,630	6,210	14,100
11	9,540	6,760	.....	.....	37,600	18,300	7,760	7,140	6,670	11,800
12	10,200	6,530	.....	.....	47,400	17,100	6,670	6,210	8,530	12,400
13	10,800	6,070	.....	.....	46,100	16,200	6,670	5,770	8,530	16,900
14	10,500	6,180	.....	.....	40,900	15,400	7,380	5,550	7,880	16,200
15	10,500	6,760	.....	.....	37,200	14,300	8,270	5,130	7,260	13,200
16	10,200	6,760	.....	.....	33,500	14,600	8,930	4,820	7,630	10,900
17	9,160	6,760	.....	.....	30,200	16,200	8,800	4,520	12,200	9,610
18	9,160	5,960	.....	.....	26,700	16,200	7,630	4,920	15,400	9,750
19	8,540	5,720	.....	.....	23,400	15,700	6,670	4,920	13,600	38,000
20	8,180	6,070	.....	.....	20,600	14,400	6,900	5,340	11,000	38,200
21	8,420	6,180	.....	.....	19,400	13,300	7,760	5,770	9,060	33,400
22	26,500	6,990	.....	.....	21,900	12,400	14,600	5,770	7,760	32,200
23	23,400	8,300	.....	.....	26,100	12,200	16,100	5,550	6,560	26,100
24	19,500	8,180	.....	.....	27,700	11,500	12,800	4,720	5,660	21,200
25	16,400	7,940	.....	.....	26,700	10,600	9,750	4,720	5,340	16,900
26	14,000	7,460	.....	.....	24,100	8,930	8,530	4,320	4,820	14,400
27	12,500	7,460	.....	59,100	21,700	8,270	9,610	4,130	4,620	12,500
28	13,100	7,340	.....	70,400	20,500	7,630	9,610	4,130	4,320	11,500
29	12,800	7,700	.....	70,200	19,900	8,660	11,200	3,950	4,130	10,600
30	11,700	8,180	.....	79,800	20,500	10,500	12,700	3,950	4,820	9,890
31	11,000	.....	.....	86,800	.....	9,750	.....	10,600	6,780	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	8,930	5,990	15,100	17,600	14,900	19,300	25,500	21,500	35,500	10,300	8,430	5,520
2	8,140	5,990	11,600	16,600	13,900	15,600	21,600	21,500	27,200	16,600	8,300	4,370
3	8,400	5,990	13,000	13,800	16,900	14,100	18,400	25,700	21,600	15,800	7,400	3,880
4	7,880	6,440	36,300	12,800	13,300	23,800	18,400	29,500	20,200	14,300	7,650	3,350
5	7,630	7,140	30,000	14,300	14,400	29,200	23,100	29,000	19,100	13,300	7,650	3,190
6	7,140	7,630	23,700	15,200	14,900	23,300	29,000	26,100	17,400	12,400	6,550	3,700
7	6,670	9,340	19,600	14,400	.....	19,100	29,500	25,100	17,000	10,600	5,970	4,070
8	6,210	12,100	16,600	13,800	.....	16,500	26,400	24,800	18,800	8,960	6,080	3,880
9	5,660	11,500	14,700	13,200	.....	15,800	23,800	23,100	23,500	7,910	5,410	3,700
10	5,990	10,300	13,200	12,700	.....	13,700	22,400	27,900	24,600	7,030	4,570	3,700
11	5,880	9,470	12,400	12,100	.....	9,780	21,600	31,600	23,800	7,150	3,980	3,350
12	6,210	8,930	10,500	12,200	.....	8,690	24,600	29,100	21,600	7,150	3,880	3,030
13	8,400	8,140	10,600	14,100	.....	7,400	29,400	27,200	18,800	7,280	3,700	3,190
14	9,060	8,400	9,610	15,200	.....	7,280	33,100	27,600	15,600	7,030	3,520	2,880
15	8,660	8,270	11,200	14,400	.....	7,650	46,800	31,600	13,300	6,200	3,520	2,810
16	7,760	8,140	13,800	14,300	.....	10,500	72,300	29,500	10,900	5,520	3,440	2,280
17	7,760	7,880	13,200	15,600	.....	11,500	71,200	28,300	10,100	4,780	3,440	2,740
18	7,140	7,630	12,700	15,600	.....	8,430	64,600	25,900	11,800	5,970	3,030	2,340
19	6,900	7,500	12,200	15,200	.....	6,320	59,600	23,300	15,300	7,400	2,340	2,540
20	7,380	7,140	12,700	13,900	.....	9,230	56,600	21,300	15,000	6,430	2,600	2,470
21	9,060	6,670	12,700	13,300	.....	10,300	53,100	20,600	12,700	5,300	2,280	2,470
22	9,610	5,990	14,600	13,900	.....	7,400	49,400	19,500	10,600	5,090	2,740	2,670
23	8,660	5,770	15,600	26,900	.....	5,860	47,200	17,400	8,960	6,200	3,980	2,340
24	8,800	5,770	15,200	44,600	.....	5,300	44,900	15,100	10,300	6,430	3,030	3,030
25	8,270	5,990	13,500	52,200	.....	5,300	40,100	13,500	15,000	6,550	3,030	2,470
26	7,630	5,770	12,200	40,000	.....	4,780	34,200	14,100	15,300	5,970	2,600	2,600
27	7,380	5,770	12,100	33,700	.....	5,520	27,900	16,600	13,700	5,200	3,190	2,670
28	6,780	6,320	11,500	29,100	23,100	15,600	25,700	43,800	11,500	4,570	3,110	2,540
29	6,210	6,900	11,600	24,800	.....	25,300	21,800	64,900	10,200	4,570	3,190	2,400
30	5,770	15,100	15,200	19,200	.....	27,200	20,900	59,900	8,690	5,520	5,740	1,850
31	5,770	.....	17,100	15,900	.....	26,400	.....	47,200	.....	6,910	6,320	.....

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.										
1	2,540	5,740	7,650	.....	56,200	50,800	12,600	12,800	6,670	2,230
2	2,000	5,520	7,030	.....	50,600	53,700	11,500	13,400	7,370	2,230
3	2,340	5,200	5,740	.....	40,600	54,900	14,400	14,200	8,610	2,290
4	2,600	4,880	.....	.....	33,900	54,800	19,700	15,400	9,540	2,480
5	2,400	4,470	.....	.....	30,900	54,400	17,600	15,900	9,400	4,300
6	2,220	4,570	.....	.....	32,500	49,700	20,400	14,500	9,130	6,780
7	1,630	4,170	.....	.....	30,900	41,100	20,200	12,300	8,610	7,130
8	2,670	4,070	.....	.....	27,800	35,300	17,600	10,200	8,100	9,000
9	2,540	3,880	.....	.....	25,400	32,300	15,200	8,350	7,370	7,980
10	2,880	3,790	.....	.....	23,700	28,700	13,600	7,610	6,900	7,020
11	2,960	3,520	.....	.....	22,100	27,600	12,900	7,370	6,110	6,440
12	3,350	3,700	.....	.....	21,000	27,400	11,700	7,730	5,480	6,330
13	3,190	4,270	.....	.....	21,000	26,800	10,800	11,100	4,970	6,670
14	3,700	4,470	.....	.....	21,500	24,700	9,670	10,500	4,210	6,440
15	4,880	4,470	.....	.....	23,900	21,500	8,220	9,000	4,030	7,020
16	5,090	4,470	.....	.....	26,200	20,200	7,490	8,610	4,120	7,250
17	4,370	4,170	.....	.....	25,300	28,300	7,020	8,610	3,850	6,900
18	3,880	4,170	.....	.....	23,900	36,600	6,670	8,350	3,510	6,000
19	3,700	6,430	.....	.....	22,800	33,500	6,440	8,100	3,680	5,170
20	3,980	11,800	.....	.....	21,700	29,700	6,220	6,670	2,750	4,870
21	7,030	12,700	.....	20,100	19,500	26,200	6,440	6,220	3,040	4,480
22	6,430	13,000	.....	21,200	18,300	22,600	9,000	6,780	3,270	4,120
23	6,430	13,300	.....	27,200	18,000	19,700	13,600	6,000	3,350	4,300
24	6,200	12,600	.....	51,200	22,200	17,200	12,600	5,790	3,190	8,610
25	5,970	10,900	.....	40,400	42,800	15,400	10,800	8,220	2,350	9,800
26	6,430	9,100	.....	28,300	49,700	13,700	8,740	9,130	2,960	9,400
27	6,910	8,690	.....	21,900	56,200	13,400	7,850	7,490	2,230	8,480
28	7,650	8,720	.....	26,000	62,400	16,200	7,980	6,900	2,230	7,980
29	7,650	8,720	.....	43,900	56,200	16,700	8,100	6,220	2,890	9,130
30	7,400	8,960	.....	57,900	51,900	15,000	9,670	5,680	2,750	26,600
31	6,430	.....	.....	61,000	.....	13,600	.....	6,000	2,350	.....

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.											
1	24,900	37,400	10,500	27,000	.....	49,500	58,800	24,700	3,940	2,890	2,890
2	22,200	29,900	9,260	22,800	.....	42,400	61,000	20,400	3,600	2,960	2,750
3	19,900	48,500	8,740	19,400	.....	36,000	54,600	19,700	3,600	2,960	2,480
4	18,600	51,200	8,610	16,900	.....	29,700	50,300	19,200	3,600	2,680	2,420
5	22,400	47,000	8,350	.....	.....	24,300	45,400	16,600	3,760	2,820	2,290
6	18,300	39,400	8,870	.....	.....	21,900	38,500	13,200	3,680	3,270	2,230
7	16,600	68,900	9,000	.....	.....	24,300	32,700	11,200	4,210	4,870	2,230
8	16,600	70,000	8,870	.....	.....	27,800	41,500	9,400	3,940	5,580	2,000
9	25,300	55,400	9,000	.....	.....	36,200	47,600	9,000	3,510	8,220	2,000
10	27,200	43,500	9,670	.....	.....	38,900	46,800	7,850	3,430	8,350	2,230
11	25,600	36,400	42,400	.....	.....	35,100	43,500	7,130	3,120	7,610	2,110
12	25,600	30,700	52,600	.....	.....	36,400	40,000	6,780	2,960	6,560	2,060
13	27,600	26,200	48,900	.....	.....	35,300	35,300	6,440	2,960	5,900	1,950
14	25,300	23,400	38,700	.....	.....	32,100	32,300	6,220	2,610	6,110	1,950
15	23,200	20,800	30,300	.....	.....	28,300	36,800	5,580	2,610	5,580	1,800
16	20,400	18,300	24,700	.....	.....	28,500	36,200	6,000	3,350	5,070	1,760
17	18,000	16,900	21,700	.....	.....	28,700	30,700	8,350	2,680	4,680	1,900
18	15,400	15,200	19,500	.....	.....	27,800	26,200	15,200	2,420	4,680	1,850
19	13,600	14,900	16,600	.....	.....	28,100	23,000	16,200	2,170	5,900	1,950
20	12,300	14,200	15,700	.....	.....	31,500	20,400	14,000	2,680	4,970	1,850
21	10,800	13,700	14,700	.....	.....	29,500	19,000	11,100	2,680	4,680	1,900
22	11,400	13,600	13,700	.....	.....	25,300	19,200	8,870	2,960	4,680	1,850
23	10,500	13,700	14,000	.....	.....	22,200	24,500	7,730	5,370	4,680	1,800
24	9,940	13,200	21,200	.....	.....	23,400	21,200	6,670	5,370	4,680	1,760
25	9,400	12,600	35,100	.....	.....	24,900	17,200	6,000	5,070	4,300	1,670
26	8,740	13,100	33,700	.....	41,900	28,100	15,200	5,680	8,480	4,030	1,670
27	8,350	13,100	28,000	.....	46,100	34,900	14,400	5,170	6,440	3,760	1,410
28	12,000	12,800	24,300	.....	54,800	41,500	13,900	4,870	4,480	3,600	1,850
29	46,800	12,100	25,300	.....	59,300	50,100	12,300	4,120	4,870	3,350	1,950
30	60,900	11,700	26,200	.....	63,300	54,400	12,800	4,210	3,430	3,120	1,710
31	50,200	.....	28,500	.....	57,000	.....	20,400	.....	2,960	2,960	.....

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.										
1	1,800	2,060	3,760	.....	20,400	33,100	16,600	3,500	2,300	2,480
2	1,900	2,230	4,480	.....	21,600	35,600	16,300	3,100	2,480	2,320
3	1,900	1,950	3,850	.....	23,300	34,700	14,000	3,050	2,300	2,380
4	1,760	2,110	3,430	.....	24,200	32,800	12,300	2,990	2,180	2,320
5	2,000	2,170	2,890	.....	28,300	32,300	11,000	3,640	2,420	1,530
6	1,800	2,060	2,480	.....	38,500	30,900	13,500	4,120	2,480	2,020
7	1,760	2,060	2,960	.....	55,100	31,200	20,900	4,300	2,550	2,020
8	2,230	1,520	3,270	.....	73,300	33,400	20,400	4,250	2,480	2,140
9	2,420	2,110	4,030	.....	73,500	34,100	13,800	4,030	2,720	2,140
10	2,290	1,900	4,030	.....	63,200	33,100	11,900	3,760	2,320	2,200
11	2,170	2,000	4,580	.....	51,600	32,500	12,200	3,760	2,380	2,580
12	2,230	2,170	6,000	.....	42,900	34,000	9,470	3,810	2,140	2,520
13	2,000	2,350	5,370	.....	38,800	34,500	9,410	3,330	2,940	3,100
14	2,110	2,350	6,220	.....	57,700	34,100	9,330	3,170	3,330	2,940
15	2,060	1,850	5,170	.....	85,200	31,500	7,300	2,900	2,720	2,750
16	2,000	2,060	5,070	.....	90,400	28,100	6,600	3,020	2,550	2,520
17	1,850	2,110	4,970	14,400	86,100	27,000	12,400	3,100	3,670	2,380
18	1,630	2,480	.....	12,700	81,500	29,500	12,000	2,940	5,410	2,220
19	2,000	2,750	.....	11,200	77,200	33,100	12,500	2,690	5,580	1,580
20	2,000	2,610	.....	9,900	75,000	33,700	9,820	2,450	4,360	2,320
21	1,800	2,540	.....	8,660	70,700	31,900	12,100	2,320	3,500	2,350
22	2,000	1,900	.....	8,020	64,200	29,200	10,000	2,450	3,020	2,480
23	1,950	2,610	.....	7,780	61,900	25,400	7,000	2,580	3,140	2,180
24	1,900	2,000	.....	8,100	56,700	22,500	6,770	4,070	2,800	2,080
25	1,480	2,110	.....	10,100	49,300	20,400	6,670	5,300	2,870	1,850
26	1,950	2,680	.....	19,900	42,800	18,800	6,380	3,330	2,650	1,310
27	1,900	2,820	.....	18,300	38,000	17,700	4,250	2,520	2,520	1,630
28	2,110	2,610	.....	18,600	35,100	15,000	3,670	2,320	2,720	3,470
29	2,350	2,000	.....	19,500	34,700	15,400	5,200	2,480	2,020	5,830
30	2,350	2,110	.....	19,300	32,700	17,100	5,240	2,690	2,520	6,950
31	2,420	.....	.....	19,600	.....	16,900	.....	2,690	2,870	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	8,790	3,670	5,720	.....	11,600	67,700	53,700	24,400	18,200	5,720	2,060	2,380
2	9,060	3,940	5,100	.....	11,000	82,200	53,200	15,800	18,100	5,410	2,940	2,450
3	7,180	3,760	4,690	.....	10,800	76,300	51,000	20,300	18,900	4,440	3,170	2,520
4	6,720	3,760	4,690	.....	11,600	67,900	43,800	21,200	18,000	4,210	3,050	1,580
5	5,830	3,500	4,590	.....	10,400	57,400	41,900	23,600	16,300	4,210	3,500	1,210
6	5,410	3,300	.....	.....	10,500	47,600	38,900	26,500	17,700	4,550	10,600	1,980
7	5,620	2,610	.....	.....	.....	43,500	36,400	26,400	21,200	4,120	9,190	3,670
8	5,370	3,500	.....	.....	.....	47,000	37,400	22,900	22,200	3,990	7,060	4,030
9	4,830	4,210	.....	.....	.....	43,700	39,100	20,400	21,000	3,530	6,160	5,830
10	3,020	4,170	.....	.....	.....	35,200	39,800	17,600	19,000	3,170	4,440	5,100
11	3,330	3,940	.....	.....	.....	29,900	31,300	17,300	18,000	2,940	4,360	3,760
12	3,940	4,030	.....	.....	.....	25,200	30,000	17,200	22,100	4,120	4,400	3,870
13	3,710	3,940	.....	.....	.....	23,500	24,600	16,600	24,100	4,030	4,590	4,400
14	3,580	3,330	6,950	.....	.....	24,200	21,400	14,900	20,700	3,530	4,030	4,300
15	3,500	3,850	6,270	.....	.....	21,900	18,300	13,800	15,900	3,100	3,360	3,990
16	3,200	3,990	5,300	.....	.....	20,500	18,200	13,800	14,900	2,940	4,120	4,440
17	2,140	3,670	4,950	.....	.....	19,200	14,700	12,700	13,900	2,060	4,120	3,940
18	2,870	3,670	4,890	.....	.....	16,800	14,600	12,300	14,800	2,080	4,030	2,550
19	3,420	4,030	4,500	.....	.....	15,800	17,600	11,700	13,100	2,300	4,210	2,140
20	3,250	3,810	.....	.....	.....	15,300	19,000	12,000	13,400	2,750	3,990	3,170
21	3,170	2,320	.....	.....	.....	20,900	18,700	12,000	12,200	2,870	3,870	3,500
22	3,300	3,250	.....	46,300	.....	25,400	18,200	14,100	10,000	2,940	3,760	3,020
23	3,300	3,760	.....	57,700	.....	26,800	18,500	10,200	8,970	2,580	4,440	3,100
24	2,800	3,760	.....	41,200	.....	31,500	20,400	12,100	7,900	1,830	4,030	2,900
25	3,710	3,990	.....	33,300	.....	36,600	23,400	11,200	7,060	1,430	4,250	1,850
26	4,630	4,210	.....	27,200	.....	56,800	27,000	11,900	7,950	2,260	4,170	1,550
27	5,370	5,200	.....	23,100	.....	58,600	34,300	17,800	4,250	2,610	3,300	2,140
28	4,440	5,520	.....	19,100	.....	52,600	33,700	25,000	5,830	3,170	1,900	2,380
29	4,300	6,160	.....	17,500	.....	50,800	31,400	24,900	5,410	2,940	1,850	2,650
30	3,940	6,380	.....	14,800	.....	53,700	28,000	23,000	6,160	3,100	2,450	2,520
31	3,300	.....	.....	11,400	.....	54,800	.....	19,900	.....	2,140	2,800	.....

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.										
1	5,100	4,550	3,710	.....	22,500	48,500	5,830	4,400	4,590	8,150
2	5,450	4,550	4,120	.....	15,800	52,600	6,050	2,720	4,590	7,180
3	4,790	4,750	3,940	.....	12,500	54,800	6,050	1,850	4,400	6,950
4	4,440	5,520	2,450	.....	12,500	51,600	4,990	1,530	4,400	4,030
5	4,500	6,380	2,320	.....	11,000	45,900	5,830	1,960	3,850	3,020
6	4,300	9,470	.....	.....	12,500	39,800	6,270	2,200	2,200	4,790
7	4,300	8,870	.....	.....	34,300	31,100	6,490	2,450	2,200	5,200
8	4,400	8,280	.....	.....	50,800	22,500	7,900	2,320	2,870	4,400
9	2,900	7,780	.....	.....	50,800	21,000	6,720	1,530	3,170	5,830
10	2,520	7,060	.....	.....	41,900	20,300	8,920	1,330	2,870	11,600
11	4,120	6,160	.....	.....	34,300	19,900	6,050	2,200	2,450	7,900
12	4,590	5,620	.....	.....	32,300	18,900	3,670	3,020	2,200	6,490
13	4,400	4,630	.....	.....	32,700	18,200	9,470	2,720	1,280	6,050
14	4,120	3,300	.....	.....	38,100	18,500	9,190	2,720	1,110	5,410
15	3,420	5,300	.....	.....	50,100	13,100	8,150	2,580	1,960	5,620
16	1,800	4,990	.....	.....	59,300	12,800	7,420	1,330	1,960	5,200
17	1,630	4,890	.....	.....	54,400	11,900	6,270	1,280	2,200	3,850
18	2,300	4,690	.....	.....	48,900	11,000	6,720	2,200	2,080	6,490
19	2,300	4,890	.....	.....	41,500	12,500	6,950	2,320	1,960	5,830
20	2,720	3,250	.....	.....	39,400	9,760	6,270	2,450	1,130	5,620
21	2,720	3,500	.....	.....	38,100	8,920	5,620	2,200	1,130	5,620
22	2,520	4,590	.....	10,600	37,600	8,920	5,830	2,200	1,850	5,410
23	1,740	5,100	.....	11,000	35,100	7,660	5,830	1,430	1,850	4,400
24	1,830	4,400	.....	9,760	30,700	7,420	5,200	1,230	2,200	2,870
25	2,990	2,750	.....	8,660	33,500	6,490	3,330	2,080	2,200	2,800
26	3,020	3,100	.....	10,600	35,600	6,270	2,450	2,450	3,330	3,330
27	2,940	1,630	.....	6,720	38,900	6,950	4,590	2,720	2,450	4,990
28	2,870	2,220	.....	36,400	39,800	4,790	4,590	3,020	2,720	4,990
29	3,580	2,870	.....	30,700	48,500	3,100	4,400	2,580	3,850	4,590
30	2,870	3,330	.....	31,100	50,800	4,400	4,790	1,960	5,620	5,410
31	2,650	.....	.....	27,600	.....	6,270	.....	3,020	7,900	.....

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.											
1	4,790	11,200	18,900	18,500	.....	46,800	32,300	48,500	2,450	2,720	4,210
2	7,420	11,900	19,200	19,900	.....	55,100	28,000	51,600	5,200	3,500	3,330
3	9,470	11,200	19,200	19,200	.....	48,500	24,100	51,200	5,200	3,850	5,200
4	8,920	10,000	13,100	19,200	.....	36,400	21,000	51,200	4,400	2,720	6,050
5	13,100	8,660	12,500	18,500	.....	29,100	21,000	45,400	1,960	2,080	6,050
6	13,100	9,190	8,920	18,200	.....	38,500	11,600	38,100	2,320	2,870	5,620
7	14,400	9,470	7,900	17,800	.....	60,700	19,200	31,900	1,740	3,670	5,620
8	13,500	13,100	8,920	14,800	.....	75,800	20,700	28,300	1,740	3,670	4,790
9	11,900	12,500	9,470	15,800	.....	79,600	20,300	25,200	4,030	3,670	4,210
10	11,900	12,500	10,000	15,100	.....	68,800	20,700	15,100	4,030	3,500	4,790
11	9,190	11,600	10,000	.....	.....	57,200	19,200	17,100	3,670	3,330	5,200
12	9,470	10,600	11,600	.....	.....	49,700	17,800	14,400	3,850	3,330	4,790
13	7,900	11,900	13,800	.....	.....	44,600	18,900	13,100	4,030	4,990	4,790
14	6,950	12,500	16,400	.....	.....	43,200	19,600	13,100	2,720	5,200	4,400
15	7,180	12,500	23,700	.....	.....	41,900	19,900	12,500	2,450	4,990	3,020
16	5,410	12,800	27,600	.....	.....	45,000	20,700	11,900	2,870	5,200	6,050
17	5,830	12,500	26,400	.....	.....	59,300	33,100	7,660	2,450	5,410	11,000
18	6,950	12,500	24,400	.....	.....	63,800	40,200	10,000	2,450	4,030	9,470
19	42,400	19,200	19,900	.....	.....	64,900	32,700	8,920	3,170	5,200	9,190
20	49,300	15,100	16,800	.....	48,500	66,300	26,800	8,920	4,400	6,050	8,660
21	34,700	15,800	12,500	.....	44,100	61,400	24,800	8,150	3,020	5,830	12,500
22	34,700	16,800	9,190	.....	33,500	55,100	29,900	7,420	2,720	4,790	13,500
23	29,900	14,100	15,800	.....	26,400	50,400	36,800	4,790	3,020	4,030	17,100
24	28,300	11,900	33,900	.....	22,200	50,800	32,700	6,490	3,330	3,670	17,100
25	23,700	12,200	33,900	.....	17,800	49,300	27,600	6,950	3,500	3,170	13,800
26	19,900	12,500	32,700	.....	16,100	47,600	24,100	6,720	4,400	2,720	9,760
27	17,800	11,600	29,900	.....	14,800	44,100	19,200	6,490	4,400	3,170	7,900
28	19,900	10,000	24,400	.....	13,800	39,800	19,200	6,490	3,020	3,670	6,950
29	19,200	12,500	19,200	.....	19,600	33,100	16,800	6,050	2,580	4,990	7,180
30	6,950	19,600	15,100	.....	41,500	34,300	21,800	2,720	2,450	5,620	5,410
31	10,000	.....	13,800	.....	43,200	.....	42,400	.....	1,960	6,490	.....

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	6,270	12,500	12,200	22,200	15,800	24,800	60,400	22,200	31,100	4,590	6,050	1,740
2	7,420	11,900	6,270	18,500	23,300	16,400	55,100	18,900	25,200	5,200	6,050	1,960
3	8,920	17,800	10,000	18,900	14,400	11,200	46,800	17,500	22,200	5,620	3,850	2,200
4	8,400	12,800	22,200	24,400	13,100	10,600	39,800	14,800	16,400	5,200	4,030	1,480
5	7,900	11,600	19,900	26,400	15,100	10,600	38,100	14,400	13,500	3,020	6,050	1,180
6	6,950	10,000	20,700	22,500	14,400	10,600	40,600	13,100	13,100	2,080	4,990	1,960
7	6,490	10,600	24,100	19,900	15,100	11,600	39,400	12,500	11,200	2,320	3,670	1,850
8	6,050	17,100	22,200	26,000	14,100	12,500	36,400	11,900	11,900	2,450	4,030	1,630
9	5,830	33,100	17,100	25,200	25,600	9,760	31,500	10,400	7,420	3,020	3,850	2,200
10	6,050	34,300	15,100	19,200	17,800	8,400	26,800	10,000	8,400	3,020	3,020	1,740
11	6,050	23,300	12,500	16,400	18,200	18,900	24,400	8,920	8,920	3,020	2,320	1,850
12	5,620	22,900	11,900	19,900	17,500	23,700	34,300	5,620	8,400	3,020	3,020	2,200
13	3,020	18,500	10,600	17,100	17,100	18,500	23,300	7,900	8,400	2,720	3,020	1,960
14	3,670	18,500	10,600	21,400	16,800	22,500	30,700	7,180	7,900	2,720	2,450	1,740
15	5,830	22,900	10,000	18,500	14,800	49,300	30,700	8,400	5,200	3,330	3,670	1,740
16	6,270	21,400	8,920	16,400	10,000	61,000	28,300	7,420	5,830	4,210	2,720	2,580
17	6,050	26,800	9,760	17,100	8,920	53,000	26,800	6,490	8,150	4,400	2,200	2,200
18	6,050	10,600	9,470	26,400	13,500	39,800	26,000	8,920	7,420	5,200	1,740	2,450
19	5,830	14,400	8,920	36,000	13,800	31,500	24,800	7,180	5,620	4,030	2,720	1,960
20	4,030	13,100	11,900	36,400	13,800	29,100	23,700	9,190	4,790	2,580	2,450	1,960
21	4,990	13,100	15,100	32,300	13,100	38,900	24,400	7,900	4,790	2,450	1,960	1,850
22	6,490	11,200	17,100	37,200	14,400	48,000	24,100	7,900	3,330	3,170	2,450	1,630
23	11,600	11,900	7,420	31,500	14,400	53,700	22,500	8,660	3,670	2,720	2,720	4,400
24	45,900	17,500	8,150	27,600	19,600	49,300	21,000	23,700	5,620	3,020	1,960	3,020
25	55,100	7,420	12,800	28,300	18,500	47,600	19,200	29,900	5,200	3,670	1,630	6,270
26	46,800	10,600	16,100	23,700	14,400	63,500	19,200	26,400	4,590	3,500	2,450	4,030
27	38,100	11,600	14,100	19,900	11,600	84,500	25,600	25,200	4,400	2,580	2,200	2,200
28	17,100	10,600	14,800	17,100	13,800	99,900	14,800	19,200	4,030	2,720	2,080	1,630
29	19,900	10,000	13,800	15,100	.....	97,400	25,600	28,000	2,720	4,210	2,450	1,330
30	15,100	9,760	11,900	13,100	.....	82,800	26,000	36,400	1,960	4,400	2,870	3,500
31	14,400	.....	21,000	12,200	.....	68,400	.....	33,500	.....	4,400	2,450	.....

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.										
1	3,330	9,240	4,990	.....	42,600	60,800	6,720	3,670	3,850	7,910
2	3,170	8,160	7,910	.....	55,500	54,200	7,420	4,210	2,320	8,420
3	3,020	7,910	7,910	.....	61,500	46,700	7,180	3,850	2,580	7,180
4	3,020	8,420	7,910	.....	51,400	41,800	6,950	2,450	3,500	4,990
5	2,320	7,910	6,490	.....	41,800	39,800	6,490	2,450	3,170	3,670
6	1,530	6,490	6,050	.....	35,300	46,700	8,960	3,330	3,020	2,450
7	4,400	6,050	5,200	.....	31,200	45,900	10,400	8,160	3,850	2,320
8	4,030	5,620	10,100	.....	33,200	43,500	6,490	7,660	3,330	2,870
9	4,400	3,850	15,000	.....	51,800	40,600	7,660	6,270	1,960	3,670
10	3,670	30,400	11,300	.....	59,500	40,600	8,690	6,490	2,200	4,030
11	3,330	18,800	8,960	.....	53,600	28,800	7,910	6,950	3,330	3,500
12	2,200	16,700	9,810	.....	56,500	32,000	6,720	5,830	3,670	3,330
13	2,080	14,000	8,690	.....	55,900	36,100	5,620	4,590	3,500	3,170
14	3,330	8,960	6,270	.....	49,900	37,300	3,020	6,050	3,170	3,170
15	4,030	10,100	6,270	.....	44,700	32,400	3,170	6,050	3,330	3,330
16	4,400	11,000	8,420	.....	42,600	26,800	4,790	4,990	1,740	3,670
17	3,670	5,830	8,690	.....	40,200	24,400	4,400	5,200	2,080	3,670
18	3,670	6,490	8,160	.....	41,000	16,000	3,850	3,850	2,720	3,670
19	2,200	7,420	7,910	.....	49,200	18,100	4,030	2,320	3,020	4,400
20	2,080	6,050	11,700	.....	68,400	16,700	3,670	2,720	2,720	2,870
21	4,210	6,950	7,910	.....	82,600	15,000	2,580	4,400	3,170	1,530
22	4,400	7,420	6,050	.....	81,900	14,700	2,870	3,850	4,030	2,870
23	8,160	9,520	6,050	.....	76,000	14,700	4,210	3,850	2,720	2,450
24	7,660	9,520	6,270	.....	68,400	16,000	3,500	3,500	2,580	2,450
25	8,960	9,810	4,030	.....	60,200	8,160	3,670	3,170	4,030	2,580
26	12,300	8,160	4,030	.....	52,200	10,400	3,670	1,850	3,670	2,450
27	16,700	6,950	6,490	.....	50,700	7,910	3,330	2,320	3,500	1,740
28	17,000	6,950	6,950	.....	53,900	6,950	2,320	3,850	3,330	1,330
29	15,300	8,420	.....	.....	53,600	8,960	2,450	3,670	2,720	2,450
30	13,300	4,990	.....	.....	58,200	8,960	3,850	3,500	3,170	2,320
31	11,300	.....	.....	41,800	.....	6,050	.....	3,500	6,050	.....

Daily discharge, in second-feet, of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	2,200	1,730	5,620	3,330	6,050	42,600	7,660	22,100	6,490	3,670	13,300	8,960
2	2,450	1,450	5,620	3,170	6,050	33,200	7,660	24,800	5,620	8,690	19,200	9,240
3	2,580	2,080	4,790	2,870	5,830	28,800	6,950	24,000	4,590	16,000	14,300	9,520
4	3,020	2,720	6,050	2,580	5,830	23,600	7,910	23,300	4,990	18,400	22,500	6,950
5	2,200	2,870	7,180	2,320	5,830	18,100	8,160	18,400	5,200	17,800	55,800	3,020
6	3,500	2,720	6,270	1,960	6,950	13,300	9,810	16,700	3,330	12,000	36,900	2,450
7	3,020	2,720	6,050	3,020	7,660	14,700	9,810	13,600	3,330	14,300	27,600	4,210
8	2,720	1,290	7,660	7,910	7,910	15,000	10,100	12,600	4,210	11,700	25,200	5,830
9	2,450	1,510	6,050	7,420	7,420	12,600	15,000	12,000	3,330	64,900	18,100	5,410
10	2,870	2,720	4,990	6,950	6,720	12,600	18,800	13,000	3,670	55,100	19,200	5,620
11	1,620	3,330	4,400	6,050	5,830	12,300	34,400	12,600	3,500	45,800	18,800	4,790
12	1,400	3,330	4,400	5,830	5,200	12,000	54,400	12,000	3,330	33,200	17,400	3,670
13	2,320	3,670	3,020	6,050	4,590	11,300	57,900	11,000	1,740	35,300	18,800	4,030
14	2,200	3,670	3,670	4,030	4,400	8,690	53,000	9,240	2,200	16,400	17,800	5,200
15	2,200	1,730	5,410	3,850	4,210	8,160	43,800	8,420	3,170	13,300	16,000	5,200
16	2,080	2,320	7,420	3,850	12,000	8,960	37,700	7,420	3,670	15,300	12,000	4,400
17	2,200	6,270	6,270	3,170	18,100	8,160	32,400	8,420	4,400	14,700	13,300	4,400
18	1,730	6,720	5,200	2,580	18,800	8,690	26,400	8,420	5,200	16,000	12,300	4,400
19	1,400	6,950	4,400	7,180	15,700	8,960	24,000	6,490	6,270	9,240	10,400	3,170
20	2,450	4,990	3,330	13,000	12,600	7,660	22,500	8,420	4,400	13,300	7,910	2,870
21	2,720	4,790	2,080	12,300	10,700	5,620	21,000	10,100	5,410	20,300	7,180	4,400
22	3,020	4,030	2,870	11,700	8,960	6,720	19,500	8,960	6,950	16,400	7,910	7,180
23	3,170	4,030	3,020	8,160	9,240	6,950	17,000	3,330	8,420	14,000	24,000	7,180
24	3,020	4,990	2,580	7,910	9,520	6,950	19,500	4,400	5,830	14,700	14,700	6,490
25	1,960	4,590	1,960	7,420	44,300	8,420	11,300	7,180	4,590	14,000	16,700	7,180
26	2,200	3,170	1,330	7,180	62,800	11,300	8,960	7,910	5,200	9,520	18,100	7,180
27	3,500	2,720	1,740	6,950	69,000	13,600	14,700	6,720	2,720	6,270	16,700	6,490
28	3,330	3,330	2,080	6,720	56,500	10,700	20,300	6,050	2,450	18,800	15,300	6,270
29	3,330	2,320	2,450	6,490	.....	10,700	21,000	6,720	4,030	10,400	8,160	6,490
30	2,720	3,020	2,870	6,490	.....	10,700	22,500	4,400	3,670	13,300	10,100	8,420
31	2,200	.....	3,330	6,270	.....	9,520	.....	3,170	.....	13,300	11,300	.....

NOTE.—Discharge determined from several rating curves, which vary slightly but which are all well defined between 1,500 and 70,000 second-feet.

Discharge relation affected by ice: Dec. 11, 1904, to Mar. 26, 1905; Feb. 7–27, 1906; Dec. 4, 1906, to Mar. 10, 1907; Jan. 5 to Mar. 25, 1908; Dec. 18, 1908, to Mar. 16, 1909; Dec. 6–13, 1909; Dec. 20, 1909, to Jan. 21, 2910; Feb. 7–28, 1910; Dec. 6, 1910, to Mar. 21, 1911; Jan. 11 to Mar. 19, 1912; Dec. 29, 1913, to Mar. 30, 1914, and Dec. 22, 1914, to Feb. 26, 1915.

Monthly discharge of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915.

[Drainage area, 8,000 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1904.						
April	69,000	22,900	38,700	4.84	5.40	B.
May	62,200	14,200	31,600	3.95	4.55	A.
June	18,200	4,080	8,100	1.01	1.13	A.
July	7,820	2,500	4,530	.566	.65	A.
August	9,280	2,310	5,120	.640	.74	A.
September	20,800	3,140	8,540	1.07	1.19	A.
1904-5.						
October	26,500	8,180	13,400	1.68	1.94	B.
November	10,600	5,720	7,510	.939	1.05	B.
March	86,800	.....	.....	.....	.....	.....
April	87,900	19,400	36,500	4.56	5.09	B.
May	21,700	7,630	15,300	1.91	2.20	B.
June	16,100	6,210	8,850	1.11	1.24	A.
July	21,600	3,950	7,810	.975	1.12	A.
August	26,100	4,130	9,390	1.17	1.35	A.
September	40,900	7,140	19,600	2.45	2.73	A.

Monthly discharge of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1905–6.						
October	9,610	5,660	7,480	0.935	1.08	A.
November	15,100	5,770	7,800	.975	1.09	A.
December	36,300	9,610	15,000	1.88	2.17	B.
January	52,200	12,100	19,400	2.42	2.79	C.
February	23,100	.....	[a] 10,700	1.34	1.40	D.
March	29,200	4,780	13,400	1.68	1.94	B.
April	72,300	18,400	36,100	4.51	5.03	B.
May	64,900	13,500	27,800	3.48	4.01	A.
June	35,500	8,690	16,600	2.08	2.32	A.
July	16,600	4,570	7,880	.985	1.14	B.
August	8,430	2,280	4,540	.568	.65	B.
September	5,520	1,850	3,070	.384	.43	B.
The year	72,300	1,850	14,200	1.78	24.05	
1906–7.						
October	7,650	1,630	4,430	.554	.64	B.
November	13,300	3,520	6,820	.652	.73	B.
December	7,650	.....	[a] 5,490	.686	.79	C.
January	.....	.....	[a] 9,500	1.19	1.37	D.
February	.....	.....	[a] 4,700	.588	.61	D.
March	61,000	.....	[a] 16,600	2.08	2.40	C.
April	62,400	18,000	32,600	4.08	4.55	B.
May	54,900	13,400	29,700	3.71	4.28	A.
June	20,400	6,220	11,500	1.44	1.61	A.
July	15,900	5,680	9,200	1.15	1.33	A.
August	9,540	2,230	5,000	.625	.72	A.
September	26,600	2,230	6,910	.864	.96	A.
The year	62,400	1,630	11,900	1.49	19.99	
1907–8.						
October	60,900	8,350	21,200	2.65	3.06	A.
November	70,000	11,700	27,900	3.49	3.89	A.
December	52,600	8,350	21,500	2.69	3.10	B.
January	27,000	.....	[a] 12,700	1.59	1.83	C.
February	.....	.....	[a] 14,000	1.75	1.89	C.
March	63,300	.....	[a] 24,100	3.01	3.47	C.
April	54,400	21,900	32,600	4.08	4.55	B.
May	61,000	12,300	32,000	4.00	4.61	B.
June	24,700	4,120	10,300	1.29	1.44	A.
July	8,480	2,170	3,770	.471	.54	A.
August	8,350	2,680	4,690	.586	.68	A.
September	2,890	1,410	2,010	.251	.28	A.
The year	70,000	1,410	17,200	2.15	29.34	
1908–9.						
October	2,420	1,480	2,000	.250	.29	A.
November	2,820	1,520	2,210	.276	.31	A.
December	6,220	.....	[a] 3,710	.464	.53	B.
January	.....	.....	[a] 6,000	.750	.86	C.
February	.....	.....	[a] 12,000	1.50	1.56	C.
March	19,900	.....	[a] 14,700	1.84	2.12	C.
April	90,400	20,400	53,100	6.64	7.41	B.
May	35,600	15,000	28,400	3.55	4.09	A.
June	20,900	3,670	10,600	1.32	1.47	A.
July	5,300	2,320	3,250	.406	.47	A.
August	5,580	2,020	2,900	.362	.42	A.
September	6,950	1,310	2,550	.319	.36	B.
The year	90,400	1,310	11,700	1.46	19.89	
1909–10.						
October	9,060	2,140	4,420	.552	.64	A.
November	6,380	2,320	3,970	.496	.55	A.
December	6,950	.....	[a] 4,530	.566	.65	C.
January	57,700	.....	[a] 13,000	1.62	1.87	C.
February	11,600	.....	[a] 8,320	1.04	1.08	C.
March	82,200	15,300	40,300	5.04	5.81	B.
April	53,700	14,600	30,000	3.75	4.18	A.
May	26,500	10,200	17,500	2.19	2.52	A.
June	24,100	4,250	14,600	1.82	2.03	A.
July	5,720	1,430	3,260	.408	.47	B.
August	10,600	1,850	4,200	.525	.61	A.
September	5,830	1,210	3,100	.388	.43	B.
The year	82,200	1,210	12,300	1.54	20.84	

[a] Discharge relation affected by ice; estimates based on gage heights, discharge measurements, climatic data, and comparisons with records of other stations.

Monthly discharge of Connecticut River at Sunderland, Mass., for the years ending Sept. 30, 1904–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1910–11.						
October	5,450	1,630	3,350	0.419	0.48	A.
November	9,470	1,630	4,950	.619	.69	A.
December	4,120	.....	a 2,800	.350	.40	C.
January	.....	.....	a 10,000	1.25	1.44	D.
February	.....	.....	a 4,200	.525	.55	D.
March	36,400	.....	a 8,960	1.12	1.29	C.
April	59,300	11,000	36,100	4.51	5.03	B.
May	54,800	3,100	19,500	2.44	2.81	A.
June	9,470	2,450	6,060	.758	.85	A.
July	4,400	1,230	2,260	.282	.33	B.
August	7,900	1,110	2,860	.358	.41	B.
September	11,600	2,800	5,470	.684	.76	A.
The year	59,300	1,110	8,870	1.11	15.04	
1911–12.						
October	49,300	4,790	16,300	2.04	2.35	A.
November	19,600	8,660	12,600	1.58	1.76	A.
December	33,900	7,900	18,000	2.25	2.59	A.
January	19,900	.....	a 9,100	1.14	1.31	C.
February	.....	.....	a 4,500	.562	.61	C.
March	48,500	.....	a 14,100	1.76	2.03	C.
April	79,600	29,100	51,400	6.42	7.16	B.
May	42,400	11,600	24,600	3.08	3.55	A.
June	51,600	2,720	18,900	2.36	2.63	A.
July	5,200	1,740	3,210	.401	.46	A.
August	6,490	2,080	4,130	.516	.59	A.
September	17,100	3,020	7,590	.946	1.06	A.
The year	79,600	1,740	15,300	1.91	26.10	
1912–13.						
October	55,100	3,020	12,800	1.60	1.84	A.
November	34,300	7,420	15,900	1.99	2.22	A.
December	24,100	6,270	13,800	1.72	1.98	B.
January	37,200	12,200	22,800	2.85	3.29	C.
February	25,600	8,920	15,500	1.94	2.02	C.
March	99,900	8,400	39,000	4.88	5.63	B.
April	60,400	14,800	30,300	3.79	4.23	A.
May	36,400	5,620	15,100	1.89	2.18	A.
June	31,100	1,960	9,050	1.01	1.13	A.
July	5,620	2,080	3,500	.438	.50	A.
August	6,050	1,630	3,130	.391	.45	A.
September	6,270	1,180	2,280	.285	.32	B.
The year	99,900	1,180	15,300	1.91	25.79	
1913–14.						
October	17,000	1,530	5,910	.739	.85	A.
November	30,400	3,850	9,270	1.16	1.29	A.
December	15,000	4,030	7,530	.941	1.08	A.
January	.....	.....	a 3,650	.456	.53	D.
February	.....	.....	a 3,170	.396	.41	D.
March	.....	.....	a 15,300	1.91	2.20	D.
April	82,600	31,200	53,400	6.68	7.45	B.
May	60,800	6,050	27,300	3.41	3.93	A.
June	10,400	2,320	5,220	.652	.73	A.
July	8,160	1,850	4,340	.542	.62	A.
August	6,050	1,740	3,160	.395	.46	A.
September	8,420	1,330	3,480	.435	.49	A.
The year	82,600	.....	11,800	1.48	20.04	
1914–15.						
October	3,500	1,400	2,510	.314	.36	B.
November	6,950	1,290	3,390	.424	.47	B.
December	7,660	1,290	4,330	.541	.62	B.
January	13,000	1,960	5,960	.745	.86	C.
February	74,700	4,210	15,700	1.96	2.04	C.
March	42,600	5,620	13,200	1.65	1.90	B.
April	57,900	6,950	22,100	2.76	3.08	B.
May	24,800	3,170	11,000	1.38	1.59	A.
June	8,420	1,740	4,400	.550	.61	A.
July	64,900	3,670	18,900	2.36	2.72	A.
August	55,800	7,180	17,600	2.20	2.54	A.
September	9,520	2,450	5,690	.711	.79	A.
The year	74,700	1,290	10,400	1.30	17.58	

a Discharge relation affected by ice; estimates based on gage heights, discharge measurements, climatic data, and comparisons with records of other stations.

CONNECTICUT RIVER AT HOLYOKE, MASS.

LOCATION.—At the dam of the Holyoke Water Power Co. at Holyoke.

DRAINAGE AREA.—8,390[1] square miles.

RECORDS AVAILABLE.—January 1, 1880, to December 31, 1899.

DETERMINATION OF DISCHARGE.—Discharge determined by adding the water wasting over the dam to the flow through the canals of the power company. Flow over dam determined by taking the mean of the flow for the 12-day hours and the flow for the 12 night hours; flow in canals obtained by weighting the flow during the day of 10 hours and the flow during the night of 14 hours. Record does not show the effect of storage above the dam but gives the flow below Holyoke.

EXTREMES OF DISCHARGE.—Maximum 24-hour flow recorded 1880–1899: 115,000 second-feet, April 16, 1895. Minimum 24-hour flow recorded: No flow at various times when water was being stored above the dam.

COOPERATION.—Record of daily discharge furnished by the Holyoke Water Power Co. through A. F. Sickman, hydraulic engineer. Monthly and yearly discharge computed by engineers of the Geological Survey.

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1880.									
1	7,300	24,650	31,700	7,300	23,900	8,750	2,300	1,800	2,050
2	7,750	18,900	29,000	8,050	22,650	8,600	1,950	2,150	2,050
3	8,300	14,350	24,300	10,700	21,900	8,150	3,100	2,150	2,050
4	7,750	12,700	23,050	21,400	20,250	7,050	4,500	2,150	2,050
5	7,600	11,550	28,850	35,900	17,700	6,100	6,150	4,550	0
6	8,450	10,900	40,150	44,100	15,450	5,700	8,300	4,650	1,750
7	8,800	10,200	35,950	42,800	14,700	5,600	6,750	3,950	1,750
8	8,800	9,100	27,600	36,650	14,800	5,400	5,400	2,850	1,750
9	8,450	8,050	22,050	30,160	14,600	5,300	4,400	2,150	1,750
10	8,450	7,300	17,950	31,800	12,750	4,900	4,200	2,150	1,750
11	7,750	7,450	15,050	20,350	11,650	4,500	2,950	2,150	1,750
12	7,550	7,650	12,900	17,100	11,100	4,450	3,100	2,150	0
13	7,500	9,400	11,800	15,000	11,500	4,200	3,650	2,150	1,650
14	7,350	16,350	11,550	13,750	10,800	3,600	5,350	2,150	1,650
15	7,050	22,950	10,800	13,300	10,350	3,700	4,600	1,250	1,650
16	7,050	21,850	10,300	14,250	9,800	3,800	3,850	2,050	1,650
17	6,950	18,350	10,050	19,800	7,350	4,000	3,700	2,050	1,650
18	6,600	16,450	9,550	23,750	8,350	3,750	2,750	2,050	1,650
19	6,550	22,750	8,950	20,900	7,950	3,550	2,700	2,050	350
20	6,650	24,850	9,050	19,950	8,300	3,100	2,450	2,050	2,350
21	6,900	21,600	8,300	18,800	8,300	2,400	3,250	2,050	2,350
22	7,000	17,700	8,500	17,400	8,050	2,300	3,600	300	2,350
23	7,700	15,500	8,350	17,550	8,150	2,150	3,250	2,050	2,350
24	9,750	13,800	8,300	18,900	8,450	2,000	3,450	2,050	2,350
25	9,800	11,750	7,950	18,200	8,800	1,850	3,000	2,050	2,350
26	9,400	10,950	7,350	16,550	8,350	1,800	2,550	2,050	0
27	8,950	11,250	7,400	15,000	7,500	1,750	2,500	2,050	2,000
28	15,700	12,650	7,100	14,500	6,450	1,950	2,450	2,050	2,000
29	22,950	19,450	6,900	15,250	6,000	2,150	2,300	0	2,000
30	23,550	.....	6,850	19,800	5,650	2,100	2,200	2,050	2,000
31	24,700	.....	6,950	.....	6,350	.....	2,100	2,050	.....

[1] Remeasured since published in previous reports.

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1880–81.												
1	2,000	8,800	3,200	2,850	2,950	12,050	9,200	36,400	11,450	6,000	4,950	2,950
2	2,000	11,050	3,150	0	2,950	17,600	9,500	32,400	10,350	5,700	5,000	2,950
3	0	10,000	3,400	2,950	2,950	17,300	9,450	29,600	9,800	5,700	5,500	2,950
4	2,350	9,300	3,000	2,950	2,950	15,800	9,350	25,450	9,400	5,600	5,950	2,800
5	2,350	7,500	2,000	2,950	2,950	14,500	8,850	24,400	7,750	5,150	4,950	4,650
6	2,350	7,200	3,500	2,950	0	12,500	8,550	20,100	7,400	4,200	3,850	4,750
7	2,350	9,200	3,650	2,950	3,600	11,650	8,550	20,300	6,800	4,750	3,000	4,300
8	2,350	10,550	3,650	2,950	3,600	11,450	7,750	19,800	6,700	4,050	4,150	4,050
9	2,350	10,650	3,500	550	3,600	11,650	8,500	19,250	6,550	3,500	4,100	3,600
10	0	8,900	3,450	2,950	3,600	14,250	10,600	19,200	6,750	2,850	5,050	3,000
11	1,900	7,150	2,900	2,950	3,600	17,450	13,500	20,000	8,050	2,950	7,050	2,600
12	1,900	6,850	1,800	2,950	3,600	17,750	17,900	25,200	8,050	2,950	6,650	3,100
13	1,900	6,650	3,150	2,950	12,250	16,650	19,000	30,850	7,150	2,950	5,200	3,100
14	1,900	5,900	3,150	2,950	13,050	15,100	17,600	32,850	6,300	2,950	4,250	3,100
15	1,900	6,000	3,250	2,950	10,850	14,300	17,400	32,050	6,350	2,950	4,100	3,100
16	1,900	5,650	3,200	800	9,350	15,100	17,600	36,650	6,550	2,950	3,300	3,100
17	0	5,350	3,150	•2,950	8,400	15,850	17,950	45,750	5,900	1,000	3,100	3,100
18	1,700	5,050	3,300	2,950	7,500	15,150	20,000	49,050	5,200	2,950	3,100	0
19	1,700	4,750	2,550	2,950	6,450	11,700	22,400	45,400	4,450	2,950	3,950	2,700
20	1,700	4,100	3,250	2,950	5,400	14,200	23,700	42,700	4,550	2,950	3,800	2,700
21	1,700	3,000	3,200	2,950	5,400	14,450	25,100	39,550	4,000	2,950	2,300	2,700
22	1,700	3,550	3,000	2,950	5,200	19,500	29,300	31,200	3,750	2,950	3,050	2,700
23	1,700	3,050	2,900	0	5,050	14,400	33,150	27,000	3,750	2,950	3,050	2,700
24	1,000	3,350	2,900	2,850	5,250	13,100	36,500	24,100	3,750	1,700	3,050	2,700
25	3,300	4,400	3,850	2,850	3,500	11,950	47,250	20,500	3,600	3,100	3,050	450
26	3,350	3,200	2,300	2,850	3,600	11,000	48,500	17,650	3,200	4,700	3,050	2,950
27	4,950	3,000	2,850	2,850	4,550	9,850	45,600	15,550	3,850	7,300	3,050	2,950
28	4,950	2,100	2,850	2,850	8,300	9,350	44,050	14,800	4,400	7,600	450	2,950
29	4,600	3,300	2,850	2,850	.....	9,150	43,400	13,500	5,500	6,100	2,950	2,950
30	3,500	3,350	2,850	700	.....	9,150	41,950	12,700	5,000	5,350	2,950	2,950
31	4,800	.....	2,850	2,950	.....	9,150	.....	12,350	.....	2,850	2,950	.....
1881–82.												
1	2,950	7,800	7,650	34,000	7,450	10,500	17,650	16,150	29,850	4,800	3,500	2,400
2	1,800	7,100	12,450	23,650	7,500	24,850	15,350	15,150	30,850	5,600	3,550	2,400
3	3,000	6,600	12,900	12,700	7,100	40,450	16,850	14,650	30,300	6,450	3,650	250
4	3,000	7,400	11,950	7,000	6,400	43,650	18,700	14,550	28,250	6,600	3,400	2,850
5	3,000	10,500	11,500	6,400	5,350	36,500	21,550	14,650	33,650	7,550	2,450	2,850
6	3,000	10,900	10,750	6,400	5,600	30,950	23,500	14,050	35,300	8,200	800	2,850
7	3,000	10,950	9,900	7,050	5,050	30,700	23,500	13,150	30,050	9,250	3,000	2,850
8	3,000	16,600	10,200	7,100	4,950	26,800	22,150	12,700	25,950	8,750	3,050	2,850
9	0	15,650	9,500	8,450	4,900	22,000	21,850	13,100	21,550	7,400	3,000	2,850
10	2,700	16,200	8,500	9,750	4,900	22,650	23,200	14,350	18,950	6,600	3,300	850
11	2,700	15,100	5,800	10,050	5,000	25,350	21,900	15,850	16,750	5,950	3,450	2,900
12	2,700	14,300	4,750	9,900	4,400	22,200	19,650	19,350	16,550	5,850	2,600	3,250
13	2,700	14,000	5,550	8,350	4,950	19,450	16,850	22,900	15,200	5,600	1,300	3,500
14	2,700	15,400	6,800	8,100	5,380	16,850	15,100	23,900	13,450	5,900	3,650	3,350
15	2,700	13,500	9,900	7,350	7,550	14,550	13,550	25,850	11,500	6,950	3,550	3,250
16	0	11,750	11,400	7,500	12,350	13,300	12,100	28,000	11,600	6,750	3,400	2,550
17	3,700	10,350	11,050	7,050	14,400	12,250	11,400	24,500	11,600	6,200	3,450	2,050
18	3,700	9,650	9,650	6,500	22,000	11,700	12,350	20,800	10,800	5,850	3,500	3,450
19	3,700	12,950	10,650	5,850	19,200	10,650	14,400	18,300	12,600	4,850	2,750	3,400
20	3,700	18,850	9,800	5,700	16,650	11,200	21,300	17,250	17,150	4,750	1,200	3,500
21	3,700	16,550	9,600	4,850	13,900	11,950	25,800	16,850	16,450	4,400	3,400	3,100
22	3,700	14,000	9,350	4,650	11,000	13,000	25,150	18,900	15,450	4,150	3,200	3,400
23	4,400	12,100	13,150	9,250	9,800	12,250	22,700	20,200	13,950	3,500	2,950	10,900
24	4,200	11,750	27,000	7,850	10,250	11,150	20,950	23,200	12,500	3,650	3,000	45,000
25	3,800	7,900	22,750	4,050	10,450	10,500	17,600	23,900	9,900	3,500	3,200	39,250
26	3,450	6,650	17,850	4,300	9,750	8,950	15,300	22,450	8,700	3,400	2,550	26,950
27	3,400	5,900	21,750	5,000	9,500	9,100	13,500	20,350	8,150	3,500	250	20,150
28	3,600	6,650	41,100	7,750	9,200	15,600	13,100	18,950	7,300	3,600	2,400	15,000
29	4,350	6,700	45,100	8,500	.....	23,400	13,850	30,900	6,550	3,150	2,400	11,400
30	4,300	6,500	46,850	9,000	.....	22,300	14,700	38,500	5,750	1,600	2,400	9,100
31	6,600	.....	46,200	8,300	.....	20,150	.....	33,500	.....	3,550	2,400	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1882–83.												
1	6,800	3,800	3,000	3,250	3,400	5,250	7,550	15,200	16,200	4,450	3,050	2,500
2	6,600	3,750	2,450	3,700	3,650	4,800	7,700	14,700	16,100	4,400	3,200	250
3	6,050	3,750	850	3,350	2,850	4,100	8,200	14,800	14,150	4,400	3,850	2,250
4	5,600	3,150	2,950	3,050	2,150	4,250	9,000	15,650	13,000	3,900	4,000	2,250
5	5,400	3,100	3,000	3,100	3,650	4,800	9,900	16,550	11,450	5,000	3,950	2,250
6	4,900	3,750	2,900	2,450	3,600	4,950	13,800	19,850	10,600	6,550	4,100	2,250
7	4,250	3,200	2,850	400	3,400	4,850	21,450	28,250	10,000	6,500	3,650	2,250
8	3,700	3,000	2,850	2,800	3,600	4,700	19,650	29,350	9,850	7,100	3,750	2,250
9	4,400	3,450	2,350	2,800	3,600	4,350	19,700	28,550	9,400	8,550	3,400	250
10	4,200	3,750	1,250	2,800	3,200	3,400	24,700	25,750	8,600	8,100	3,450	1,950
11	4,200	2,800	2,950	2,800	3,200	3,150	33,950	24,500	8,600	7,850	3,200	1,950
12	4,300	1,700	3,250	2,800	3,650	3,600	41,350	24,250	8,450	7,600	2,450	1,950
13	4,350	3,850	3,500	2,800	3,550	3,550	59,450	21,600	10,600	7,200	3,650	1,950
14	4,400	3,700	3,650	900	3,600	3,700	68,300	19,950	13,150	7,750	3,300	1,950
15	5,300	3,650	3,600	2,850	3,500	3,750	67,150	18,550	16,100	5,950	3,250	1,950
16	5,100	3,650	2,750	2,850	3,500	3,750	67,050	18,100	17,200	6,600	3,200	250
17	4,100	3,700	850	2,950	2,750	3,650	63,400	17,100	13,950	7,050	3,350	2,150
18	4,050	3,700	3,050	2,950	3,050	3,600	60,300	15,500	11,550	6,800	2,650	2,150
19	4,150	3,750	2,950	2,900	4,650	4,850	57,300	14,350	9,900	7,400	950	2,150
20	4,400	3,750	3,050	2,400	5,150	6,300	56,200	12,500	9,550	7,350	2,900	2,150
21	4,750	3,700	3,050	800	5,650	7,550	56,500	12,200	10,450	6,450	2,850	2,150
22	4,700	3,600	3,200	2,950	5,750	7,250	45,800	14,700	11,750	5,150	2,750	2,150
23	5,050	3,700	2,500	2,950	5,400	6,550	36,550	24,150	11,350	4,950	3,050	250
24	4,800	3,600	1,250	2,900	4,750	5,950	27,900	29,100	10,050	4,650	3,100	2,300
25	4,500	2,850	2,850	2,850	4,550	5,900	24,300	26,200	9,200	3,900	2,350	2,300
26	4,250	1,050	3,450	2,950	4,600	6,050	20,900	22,650	8,050	3,950	1,000	2,300
27	4,100	3,700	3,450	2,400	4,700	6,600	18,900	19,950	6,850	3,500	2,850	2,300
28	3,600	3,750	3,550	1,000	5,000	7,500	18,150	17,950	6,000	2,600	2,700	2,300
29	3,500	3,650	3,700	2,950	.....	8,300	17,000	15,350	5,800	1,750	2,850	2,300
30	3,800	2,400	2,500	3,000	.....	8,400	16,400	14,500	5,000	3,350	2,750	900
31	3,500	.....	1,350	3,000	.....	8,050	.....	15,000	.....	3,300	3,200	.....
1883–84.												
1	2,900	7,000	6,250	8,150	5,450	9,500	34,850	35,450	15,500	6,200	4,050	5,450
2	3,050	6,250	4,950	7,500	5,450	8,900	30,150	33,750	14,450	4,900	3,200	4,500
3	3,700	6,000	3,850	7,450	5,600	8,850	26,600	32,200	13,150	3,000	1,000	4,400
4	4,650	5,450	3,650	7,000	5,700	8,500	24,850	29,950	12,100	4,250	3,500	4,050
5	4,500	5,700	3,800	6,550	5,650	8,350	23,300	30,000	11,250	4,400	3,500	3,750
6	3,650	5,150	4,050	5,850	5,850	8,100	21,000	29,850	10,550	4,600	3,500	3,200
7	3,050	4,650	3,900	5,650	8,050	7,900	20,400	29,900	9,600	5,000	3,500	1,100
8	3,650	4,400	3,900	5,100	10,700	7,600	20,800	28,550	8,750	4,600	3,500	3,050
9	3,650	4,050	4,100	5,950	11,350	7,300	24,000	26,700	8,550	4,350	3,500	3,050
10	3,300	3,800	5,000	8,750	10,650	7,300	28,000	24,250	9,250	4,100	1,150	3,050
11	3,400	3,700	4,900	8,800	10,800	7,300	30,750	22,950	12,700	4,050	3,600	3,050
12	3,400	4,400	4,900	8,150	10,300	7,550	33,600	23,600	12,600	4,350	3,600	3,050
13	2,600	4,300	4,550	7,200	9,950	11,850	25,700	23,150	12,000	4,200	3,600	3,050
14	950	4,250	4,700	7,350	11,200	17,300	36,650	22,800	10,950	4,100	3,600	550
15	4,050	4,150	3,750	6,850	15,550	18,950	37,750	25,600	9,100	3,950	3,600	2,700
16	3,800	4,050	2,900	6,100	19,350	17,150	45,750	25,700	8,500	4,000	3,600	2,700
17	3,500	3,250	3,450	5,700	18,300	15,100	62,100	25,250	8,200	4,150	1,000	2,700
18	3,300	2,650	3,450	5,350	20,550	13,750	66,850	26,100	7,350	4,800	2,800	2,700
19	3,400	3,450	3,400	5,150	25,900	13,100	70,800	27,200	6,950	4,250	2,800	2,700
20	2,500	3,400	3,350	5,200	27,200	12,950	69,500	25,800	6,700	4,300	2,800	2,700
21	1,850	3,450	3,500	5,200	28,100	13,150	66,850	26,050	6,200	4,350	2,800	500
22	3,200	3,450	2,750	4,950	26,200	13,000	60,950	27,050	6,000	4,350	2,800	2,650
23	3,350	3,650	1,550	5,250	24,250	14,250	53,350	27,700	5,850	4,000	2,800	2,650
24	3,350	4,600	3,100	5,400	20,950	21,750	46,800	27,650	5,650	4,100	1,350	2,650
25	3,300	5,300	1,800	5,650	18,150	35,250	41,900	27,650	5,050	4,150	3,650	2,650
26	3,250	6,750	3,000	5,900	15,350	49,500	39,200	26,500	5,450	3,950	3,650	2,650
27	2,750	8,600	2,950	5,750	13,500	71,350	38,150	24,300	5,650	4,200	3,650	2,650
28	2,650	10,100	3,500	5,600	12,450	71,900	39,350	22,000	5,700	4,900	3,650	950
29	3,600	8,350	4,350	5,300	11,100	71,550	39,200	20,800	7,200	5,100	3,650	2,900
30	7,050	7,700	5,250	4,850	.....	58,850	37,950	19,950	7,200	4,600	3,650	2,950
31	8,350	.....	6,650	4,850	.....	45,450	.....	17,550	.....	3,900	5,800	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1884–85.												
1	3,000	6,050	11,650	16,200	7,300	5,250	8,500	33,550	7,500	7,550	2,950	8,150
2	3,100	5,950	10,350	20,800	6,700	5,100	11,100	29,100	9,000	5,650	4,250	6,950
3	3,200	5,750	9,100	17,350	7,700	5,150	14,050	25,250	8,050	5,100	5,000	6,500
4	2,650	5,200	7,650	12,500	8,050	5,450	25,950	22,800	9,200	9,000	6,150	6,250
5	1,100	5,700	6,700	11,400	7,900	5,550	29,050	20,200	10,250	9,050	6,650	5,950
6	3,200	9,000	7,050	11,400	7,750	5,550	31,450	18,350	17,600	8,500	7,450	4,450
7	3,200	9,050	20,000	17,000	7,750	5,400	30,700	16,800	17,600	7,850	7,800	6,300
8	4,000	9,200	26,650	21,300	7,850	5,050	35,650	16,500	14,550	7,750	6,500	6,600
9	6,100	9,400	22,700	19,200	7,250	5,250	40,150	20,450	13,200	8,500	4,450	5,750
10	5,600	7,700	28,100	15,500	8,000	5,050	41,250	23,300	11,150	9,700	5,550	6,050
11	4,900	8,200	16,800	13,900	9,000	5,100	37,400	23,450	9,300	9,850	5,350	7,100
12	4,300	7,550	14,100	24,350	9,150	4,950	32,900	22,200	7,850	10,500	4,850	7,750
13	4,150	6,900	11,650	36,650	8,900	4,850	29,150	20,450	6,400	11,750	4,300	6,950
14	3,700	6,500	9,850	32,550	8,850	4,600	25,950	18,500	5,350	12,050	4,600	7,350
15	3,500	6,000	10,150	24,100	8,150	4,350	26,700	16,450	5,100	11,100	12,850	6,850
16	3,600	5,600	10,900	17,800	7,200	4,500	30,300	15,000	4,650	10,050	13,550	6,700
17	4,200	5,650	11,100	16,950	6,500	4,300	33,550	13,800	4,300	10,150	10,750	6,300
18	4,400	5,500	10,800	16,150	6,500	4,400	34,400	14,150	3,800	9,100	8,050	5,700
19	4,250	5,300	7,500	13,600	6,300	4,300	35,800	13,950	3,550	7,800	6,100	4,800
20	4,300	4,950	5,600	12,350	6,200	4,300	39,850	13,550	3,400	5,850	4,850	4,100
21	3,900	4,700	4,700	13,950	6,700	3,950	46,550	12,850	3,800	4,950	4,050	4,250
22	4,000	4,000	5,450	16,450	6,950	4,000	56,750	12,000	4,150	5,050	3,550	4,150
23	4,150	4,150	8,350	11,850	6,000	4,150	62,800	11,100	5,000	4,250	5,950	3,850
24	4,350	12,850	9,800	8,550	5,700	3,650	63,950	10,850	3,850	3,900	6,750	3,050
25	3,100	17,650	9,200	9,100	5,500	3,600	60,900	11,550	3,550	3,700	5,950	3,300
26	3,750	17,550	9,350	7,800	5,500	3,700	54,400	11,300	3,500	3,900	5,800	4,150
27	4,900	16,150	9,050	7,650	5,450	4,700	51,500	10,800	3,100	3,650	5,900	4,500
28	5,200	14,350	8,900	7,150	5,250	5,450	47,350	9,600	3,300	3,200	5,300	4,750
29	4,650	12,750	7,400	7,050	.....	5,700	43,850	8,850	4,050	3,300	4,900	4,650
30	4,850	12,250	6,850	7,250	.....	5,600	41,050	8,150	4,100	3,000	5,200	4,350
31	5,350	.....	9,250	7,500	.....	6,150	.....	7,100	.....	2,950	5,400	.....
1885–86.												
1	4,250	17,150	9,200	13,450	13,450	14,350	59,950	14,300	12,900	4,350	2,450	2,500
2	3,750	23,500	8,700	18,200	12,200	14,700	80,150	13,700	11,200	3,300	3,300	2,850
3	3,800	37,450	8,150	20,050	11,150	11,450	69,650	13,300	11,150	3,450	3,050	3,000
4	3,750	33,950	7,700	19,750	11,500	9,600	51,500	12,500	10,500	3,300	2,950	2,250
5	4,150	27,850	7,800	42,700	11,050	8,250	37,500	11,750	9,950	3,050	3,200	600
6	4,100	24,850	6,500	58,950	8,750	7,650	34,150	11,700	10,550	3,960	3,100	2,500
7	6,700	23,050	4,750	45,750	7,400	7,300	37,950	11,500	10,900	3,250	2,300	2,450
8	8,000	23,400	5,000	30,550	7,250	7,400	32,050	12,050	10,250	3,100	1,450	2,500
9	7,700	44,850	6,700	17,950	7,200	7,300	27,450	19,600	8,850	3,000	2,900	2,550
10	6,800	47,200	16,900	9,450	7,200	7,100	26,450	18,250	8,000	2,150	2,800	2,500
11	5,700	38,750	24,600	12,050	7,400	6,850	28,150	16,700	7,500	850	2,900	1,650
12	5,350	32,750	21,250	11,800	9,000	6,800	27,700	17,550	6,800	3,150	2,900	50
13	5,400	27,150	16,400	10,700	14,300	6,700	28,150	16,400	6,500	2,800	2,900	2,100
14	5,450	22,550	16,650	10,100	22,250	6,700	35,000	14,250	6,200	2,800	2,050	2,100
15	5,800	18,000	17,650	9,850	30,300	7,050	41,250	12,250	6,350	2,750	550	2,100
16	5,350	16,200	16,500	9,500	36,650	7,800	43,950	11,800	6,600	2,900	2,650	2,100
17	5,600	14,800	13,850	10,050	37,500	8,450	43,250	13,850	7,800	2,300	2,550	2,100
18	5,100	13,550	11,800	10,700	32,950	8,800	42,400	13,350	7,150	2,500	2,550	2,100
19	4,850	13,050	11,000	9,850	26,150	9,250	42,650	12,150	6,600	3,950	2,600	50
20	4,850	12,550	12,050	9,550	21,500	9,200	42,800	12,200	5,850	3,950	2,950	2,700
21	4,850	12,700	10,700	8,950	17,150	9,150	42,250	11,650	5,800	3,700	2,700	2,700
22	8,700	12,800	8,300	8,850	14,650	9,800	40,350	10,250	6,050	3,800	3,650	2,700
23	13,850	13,250	8,600	11,250	13,300	9,650	37,400	8,850	5,950	3,250	3,950	2,700
24	18,400	12,400	10,350	13,800	12,350	8,500	33,750	8,500	5,850	2,800	3,600	2,700
25	18,000	11,750	11,000	9,700	10,650	8,350	29,350	8,200	5,450	2,100	3,200	3,200
26	15,900	11,050	14,200	8,150	11,100	8,650	25,950	7,500	4,700	3,150	3,150	3,350
27	13,000	10,550	13,400	7,600	18,350	9,800	22,500	7,950	4,850	3,100	3,150	3,650
28	11,600	10,700	8,300	7,850	17,000	10,700	19,750	10,400	5,150	3,200	2,350	3,450
29	10,550	7,800	7,900	9,550	.....	13,050	17,600	14,250	4,900	3,050	1,050	4,350
30	11,050	7,500	7,400	12,100	.....	14,600	16,550	15,150	4,550	3,150	2,650	5,100
31	15,150	.....	8,200	12,800	.....	22,750	.....	14,700	.....	2,500	2,500	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1886–87.												
1	6,150	10,300	18,250	9,700	31,900	8,300	8,750	72,500	17,100	9,350	12,950	8,350
2	8,850	9,950	21,050	9,950	25,250	8,250	8,150	62,550	17,250	7,900	12,300	8,500
3	8,800	8,750	17,700	10,250	20,200	8,150	8,100	57,400	16,850	6,750	14,200	6,600
4	8,050	7,550	12,500	10,150	17,550	7,850	9,650	56,500	16,750	5,750	12,700	6,100
5	6,850	6,800	7,400	9,250	15,200	7,350	14,600	57,550	17,750	6,200	10,350	6,300
6	6,100	5,850	6,150	8,750	13,600	7,200	18,650	54,900	16,900	6,150	8,800	6,250
7	5,500	6,150	8,300	8,250	13,450	7,400	21,500	51,400	14,700	7,650	10,100	6,100
8	4,100	8,400	8,600	7,750	12,700	7,300	22,400	48,850	12,700	9,050	11,250	6,550
9	3,550	9,750	9,050	7,750	12,300	7,300	21,700	48,250	11,200	8,500	11,300	6,700
10	3,300	10,000	9,550	7,450	12,100	7,700	30,300	44,500	9,850	8,200	10,250	6,500
11	3,700	9,800	9,350	7,350	12,950	7,900	65,000	37,000	8,600	8,550	9,500	6,100
12	3,450	9,450	9,300	7,350	13,200	7,300	85,500	36,200	7,950	8,950	9,150	6,000
13	3,250	8,900	9,600	7,650	14,000	7,250	77,650	32,700	8,100	9,100	7,850	6,150
14	3,200	8,000	9,700	7,850	13,850	7,600	59,300	29,200	7,550	9,500	7,150	6,400
15	3,250	7,800	9,650	7,400	12,350	7,900	50,700	24,900	6,550	8,850	6,500	6,600
16	2,400	7,750	8,800	7,950	12,200	7,650	48,250	21,950	6,100	7,250	6,250	6,250
17	1,100	7,550	7,400	7,200	12,500	7,600	48,450	18,850	5,850	6,400	5,650	5,550
18	3,300	12,500	6,850	6,650	12,350	7,600	48,350	16,800	5,300	6,600	9,950	5,100
19	3,350	24,850	7,650	6,800	13,150	7,200	41,350	15,700	5,150	6,450	16,000	4,850
20	3,250	34,800	8,950	7,550	13,700	7,700	35,750	14,900	5,300	5,850	13,050	4,850
21	3,300	29,050	8,750	7,600	12,900	8,650	35,350	13,450	5,500	5,550	10,800	4,800
22	3,200	25,450	8,300	7,150	11,850	9,600	40,950	11,700	5,650	5,650	9,900	4,600
23	2,450	22,100	8,100	7,250	10,800	9,550	50,150	11,600	8,250	6,250	14,150	4,300
24	1,000	28,200	8,000	8,500	10,150	9,300	58,300	10,750	22,500	15,150	19,750	3,700
25	3,250	26,950	9,300	14,750	9,600	9,150	70,050	10,050	27,650	32,300	26,750	3,650
26	3,300	23,800	12,450	19,450	8,100	8,500	70,850	10,150	26,000	26,850	23,150	3,650
27	3,350	21,400	14,950	21,600	7,800	8,400	67,850	11,650	22,700	26,250	17,650	3,800
28	3,600	18,500	14,050	19,050	8,250	9,100	63,550	15,900	18,200	21,950	13,300	3,750
29	6,550	16,450	12,250	20,100	.....	9,900	70,350	22,350	14,300	17,800	11,200	3,800
30	6,450	15,400	11,150	36,900	.....	9,550	78,800	24,050	11,350	16,250	9,800	3,700
31	7,500	.....	9,950	39,150	.....	8,850	.....	20,050	.....	15,100	8,950	.....
1887–88.												
1	3,300	4,450	17,000	7,650	7,250	9,050	36,400	99,750	16,400	7,600	3,000	6,850
2	3,600	4,450	12,700	9,800	7,350	8,550	37,400	93,550	15,000	7,000	3,000	8,600
3	4,150	4,250	8,850	12,950	7,650	7,750	40,850	79,800	13,550	5,800	3,300	8,450
4	4,250	4,200	7,400	13,750	7,400	7,250	39,300	67,950	13,750	5,800	2,550	7,050
5	4,600	3,550	8,700	13,550	7,500	7,400	35,550	59,100	13,050	5,650	1,100	6,950
6	4,550	3,500	10,550	12,350	6,850	7,300	43,550	51,300	11,950	5,700	3,100	6,500
7	4,400	3,800	11,700	10,950	7,150	7,000	54,300	49,850	11,400	5,300	3,100	5,750
8	3,900	3,750	11,100	10,300	7,600	6,750	50,550	49,350	11,400	4,750	3,250	4,900
9	4,050	4,200	10,250	10,100	7,200	6,400	40,600	47,250	10,950	4,350	3,450	6,200
10	4,150	4,050	9,200	9,400	7,250	6,150	34,600	52,350	10,300	4,250	3,450	8,500
11	4,050	3,550	11,250	8,350	6,600	6,200	32,400	55,200	10,400	4,100	2,450	7,550
12	4,400	3,500	24,700	8,100	7,350	6,300	31,250	65,150	9,850	3,550	1,650	7,100
13	4,250	4,500	27,600	7,850	7,050	5,650	30,350	71,250	8,950	3,700	4,200	6,700
14	4,250	4,600	23,850	7,300	6,700	5,900	30,500	71,400	8,150	2,900	6,750	6,450
15	3,750	4,800	20,550	7,350	6,800	6,050	28,150	75,650	8,500	4,400	6,750	5,650
16	3,650	6,450	18,450	7,900	6,850	6,400	27,150	73,000	8,300	3,650	5,750	5,050
17	3,750	7,650	15,150	8,600	7,100	6,350	28,300	62,300	7,650	4,150	5,300	4,950
18	3,750	7,550	12,400	8,950	7,150	6,400	31,100	51,400	7,900	5,350	4,800	10,200
19	3,850	7,050	11,350	8,800	7,350	6,450	31,950	42,250	7,700	4,900	5,500	14,750
20	3,700	7,850	9,900	8,650	7,050	6,550	34,150	34,850	7,000	4,750	5,950	13,500
21	4,200	10,450	9,350	8,000	8,300	8,000	35,750	29,800	6,300	3,700	5,500	24,350
22	5,150	9,950	9,450	8,100	11,800	15,150	34,100	26,100	6,450	3,600	6,000	42,000
23	5,950	9,100	10,100	7,300	13,800	22,600	34,300	23,400	6,600	3,750	6,300	34,000
24	6,200	7,750	7,450	7,100	14,100	25,300	34,650	21,350	6,700	3,500	6,050	26,600
25	6,200	7,500	6,700	7,150	12,750	24,150	32,750	20,100	12,900	3,550	5,300	20,650
26	6,100	7,500	6,100	7,250	11,800	21,950	31,700	18,250	17,600	3,600	4,900	18,050
27	5,700	7,850	6,650	7,000	11,750	19,950	35,300	16,750	14,700	3,500	4,750	19,350
28	5,400	11,450	6,700	6,850	10,650	19,000	48,200	16,700	12,400	2,650	5,300	18,750
29	4,700	15,250	7,800	8,000	9,700	20,500	70,100	18,550	11,050	1,600	6,950	17,750
30	4,400	18,700	8,250	7,250	.....	25,750	90,900	19,900	9,050	3,400	8,150	16,400
31	4,500	.....	7,700	7,000	.....	32,400	.....	18,050	.....	3,150	7,650	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1888–89.												
1	15,500	21,650	25,950	21,150	11,100	5,750	16,300	29,050	9,200	10,850	18,550	2,450
2	19,200	19,650	21,800	19,000	9,950	5,950	16,100	25,150	18,800	9,800	20,850	3,350
3	20,200	17,000	19,250	16,950	10,000	5,750	15,900	21,350	21,150	9,700	21,050	3,900
4	17,350	16,900	17,000	15,550	8,850	6,150	15,750	18,000	17,600	10,050	19,100	3,450
5	15,150	18,450	15,100	14,300	8,200	7,500	18,150	15,750	14,650	9,850	16,300	3,100
6	13,600	17,650	14,300	13,550	7,750	11,050	19,550	14,650	12,800	9,050	16,400	3,500
7	17,900	17,050	13,150	15,450	6,850	14,450	19,950	13,200	12,100	8,000	14,250	2,700
8	23,050	15,600	11,950	20,500	6,950	15,000	20,950	12,400	11,900	8,000	11,550	1,350
9	21,850	15,950	11,000	21,500	6,900	13,800	23,950	11,750	12,900	7,300	9,850	3,250
10	20,000	21,850	11,600	28,850	6,950	12,200	26,250	11,450	15,300	6,650	8,650	3,400
11	18,500	34,300	11,250	30,450	7,550	11,900	27,750	11,000	17,900	6,900	8,150	3,650
12	16,800	38,050	10,850	25,300	7,300	11,000	29,150	10,600	21,750	7,700	8,500	3,650
13	15,800	34,350	10,600	20,350	7,200	10,500	32,300	10,600	20,600	7,450	8,600	3,650
14	16,300	29,750	9,900	18,100	7,050	11,150	31,600	9,950	18,500	6,550	9,050	2,350
15	17,750	26,850	6,400	15,150	7,100	11,650	28,050	9,600	16,100	6,500	9,600	2,100
16	17,250	30,000	5,700	12,500	6,600	10,750	24,800	9,500	13,200	7,200	9,300	3,850
17	16,850	29,800	12,950	16,050	6,700	10,200	22,750	9,300	13,000	7,050	7,900	3,300
18	18,650	26,600	58,050	31,000	7,300	11,250	23,700	9,100	12,500	6,250	6,950	6,550
19	17,950	24,500	59,300	25,600	7,400	13,400	27,650	8,500	13,600	5,750	6,550	8,400
20	16,200	25,300	36,350	17,150	7,350	16,700	33,000	8,800	13,300	9,500	6,250	9,000
21	15,900	26,050	24,150	12,950	7,000	17,250	36,650	11,000	11,400	14,350	5,800	11,750
22	16,050	22,550	16,400	10,600	6,900	16,650	37,800	18,900	9,400	15,000	5,300	14,200
23	15,350	18,000	10,000	10,200	6,050	16,900	35,350	21,300	7,750	12,800	5,200	17,450
24	15,600	14,000	12,250	10,950	5,700	18,350	31,950	19,100	7,550	10,500	4,650	13,750
25	19,450	12,650	13,450	11,650	5,950	13,550	28,800	17,550	7,000	8,950	4,400	11,350
26	19,850	10,950	16,700	10,450	5,950	24,600	25,250	14,400	6,300	7,700	4,550	9,450
27	17,900	13,300	21,750	10,000	5,800	21,750	26,150	12,850	6,500	7,050	4,450	7,750
28	17,850	16,600	31,150	10,250	5,600	19,850	32,400	11,900	8,000	7,800	4,200	6,150
29	20,800	31,400	30,800	11,650	.....	20,050	34,300	11,550	10,500	8,500	3,900	5,700
30	22,150	31,050	25,650	10,300	.....	19,250	31,600	10,650	10,850	11,350	3,800	7,250
31	22,450	.....	23,850	9,200	.....	17,300	.....	9,300	.....	18,500	2,700	.....
1889–90.												
1	7,850	14,000	21,550	12,050	8,550	37,250	14,650	24,950	20,200	7,450	4,000	17,750
2	7,450	12,650	18,250	11,950	8,750	32,350	13,650	23,900	17,800	6,250	2,800	17,050
3	8,250	16,350	15,950	14,950	9,000	23,850	13,600	24,250	15,750	5,300	3,350	15,100
4	11,400	31,950	13,500	17,800	9,250	18,650	17,950	23,800	14,350	5,400	3,800	12,350
5	12,250	30,150	10,500	17,000	11,900	16,750	34,250	25,450	13,650	6,600	3,700	10,000
6	12,050	26,800	9,350	17,400	18,000	14,400	41,850	31,700	19,650	7,100	3,700	7,950
7	16,300	23,200	9,750	20,700	17,050	11,200	38,050	42,300	25,950	7,100	3,700	9,200
8	22,350	19,600	9,850	23,100	15,600	9,650	37,750	46,750	25,000	6,850	3,750	10,300
9	21,850	16,050	18,750	19,300	21,050	10,250	37,450	45,050	21,850	6,050	2,350	8,600
10	21,350	13,500	37,650	15,400	19,000	10,650	35,800	39,650	18,450	5,550	1,450	8,900
11	19,900	13,700	36,300	9,950	16,050	10,650	32,800	35,100	15,550	5,100	3,750	13,700
12	17,050	13,650	37,650	10,100	13,750	11,000	30,050	33,000	13,450	4,400	3,700	12,800
13	14,900	14,450	34,200	13,800	12,400	17,600	28,250	29,550	13,350	4,550	3,150	13,450
14	14,500	16,650	26,450	17,300	11,950	28,550	33,500	26,900	13,300	4,800	2,750	17,200
15	12,200	17,350	20,000	17,250	17,000	29,450	41,900	28,650	13,850	4,700	2,900	22,800
16	10,500	15,950	16,150	19,850	18,350	21,800	46,250	31,600	14,900	4,300	2,100	24,050
17	9,050	15,250	14,400	23,200	17,600	21,250	43,100	29,900	13,750	3,650	550	21,650
18	8,050	12,600	14,800	19,900	15,250	18,700	39,050	28,050	12,050	3,700	2,800	32,100
19	6,300	12,050	17,200	17,350	13,050	16,850	36,650	26,300	10,650	2,600	2,800	28,300
20	5,800	13,750	23,400	16,150	10,100	14,700	27,600	24,650	9,350	1,550	3,100	22,400
21	6,450	16,250	25,550	18,200	9,800	14,000	23,600	31,450	7,250	3,700	3,500	17,900
22	6,350	17,250	25,750	17,550	9,250	18,300	21,250	36,050	6,900	3,650	3,550	14,950
23	5,900	19,600	24,850	14,200	8,600	30,350	20,350	36,550	7,150	3,600	4,550	12,350
24	4,900	20,450	21,650	11,700	9,200	27,950	20,250	33,700	6,750	3,500	7,900	10,400
25	6,850	20,350	19,400	10,500	9,800	22,300	21,700	30,100	6,550	3,650	13,850	9,050
26	7,250	18,150	24,150	10,300	16,600	21,700	23,150	25,700	6,400	3,850	13,550	8,200
27	7,000	15,600	24,500	11,400	31,550	24,150	24,500	26,250	7,350	6,000	12,400	7,100
28	9,800	27,900	19,700	9,900	35,000	22,850	27,350	37,950	8,900	6,200	13,650	6,900
29	13,150	37,250	15,250	9,100	.....	19,450	28,200	36,750	8,700	5,200	18,450	7,950
30	14,350	28,250	14,400	9,700	.....	16,400	26,850	30,050	8,350	5,050	17,800	7,900
31	15,050	.....	13,550	9,150	.....	15,600	.....	24,600	.....	4,350	17,300	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1890–91.												
1	7,250	15,150	7,250	6,050	15,900	35,450	35,100	21,650	9,950	3,400	9,350	5,600
2	7,000	14,300	6,500	6,850	18,350	28,800	32,750	20,400	10,150	3,650	6,650	5,000
3	6,250	14,650	4,750	6,100	18,100	24,350	32,550	18,600	10,400	3,600	6,150	5,150
4	4,450	14,400	4,350	6,450	15,800	20,400	30,750	18,700	11,800	3,300	5,350	5,250
5	3,850	13,400	5,250	7,300	15,550	18,250	27,600	19,550	11,900	2,900	5,050	4,150
6	7,250	12,550	5,350	7,500	14,450	17,350	25,400	19,000	10,750	3,650	5,300	4,050
7	7,300	12,200	5,900	7,700	13,350	16,650	23,100	17,850	9,900	3,500	5,150	4,850
8	8,350	11,350	6,600	7,500	12,500	15,150	21,250	16,450	9,750	5,450	4,650	5,550
9	9,800	11,050	7,150	7,400	11,900	15,800	20,250	14,400	8,900	6,550	4,200	5,250
10	10,600	11,600	7,100	6,900	11,350	22,250	20,650	12,900	7,850	6,650	4,500	4,850
11	9,900	12,850	7,200	7,100	11,900	26,550	22,500	12,750	6,800	5,700	4,000	4,350
12	9,650	13,200	6,750	9,400	11,500	25,700	36,550	13,000	6,400	5,750	4,150	3,400
13	9,850	13,200	5,950	14,250	10,900	27,850	51,700	13,700	6,100	5,100	4,100	3,200
14	9,750	12,750	6,150	19,150	9,500	37,450	55,250	14,250	5,000	4,400	4,100	4,150
15	9,600	11,400	6,350	19,700	8,850	37,700	61,050	13,700	5,100	4,250	3,050	4,350
16	10,300	10,650	6,250	17,300	9,150	34,900	67,300	12,650	5,050	4,000	1,600	4,200
17	13,900	10,900	6,250	14,500	10,850	29,050	66,100	14,000	4,550	4,200	4,450	4,150
18	33,650	16,850	6,300	12,650	16,450	24,000	61,500	19,600	5,000	3,950	5,400	4,050
19	33,900	26,950	5,800	12,500	20,100	22,050	63,850	21,050	5,650	4,300	5,100	3,200
20	44,000	26,400	5,100	11,900	18,500	20,400	65,650	20,050	7,200	6,500	4,500	1,450
21	43,700	23,300	5,600	11,300	15,450	17,600	59,400	18,300	6,650	6,500	4,050	4,100
22	35,550	18,900	5,950	12,900	14,700	17,350	53,650	15,850	6,950	6,250	4,400	3,600
23	28,000	16,950	5,950	26,700	14,450	29,950	51,950	13,800	8,800	5,200	4,500	2,900
24	29,050	14,800	5,850	31,400	13,750	29,100	50,700	12,350	8,700	4,650	4,600	2,900
25	41,350	12,950	4,550	29,800	17,350	63,250	45,400	12,600	7,600	5,150	5,000	4,100
26	33,700	12,100	5,200	26,600	34,850	60,450	39,600	11,750	6,400	5,600	5,100	2,850
27	25,800	11,650	4,100	22,650	44,950	51,050	36,450	10,600	5,600	5,350	4,950	1,200
28	21,350	10,400	4,700	19,850	44,450	43,000	31,800	9,900	4,700	6,000	10,350	2,900
29	18,350	7,900	5,300	17,750	.....	38,400	27,150	9,800	4,600	7,200	10,950	2,900
30	17,150	7,750	5,350	16,600	.....	39,500	23,400	10,050	4,050	6,800	7,300	3,050
31	17,200	.....	5,950	16,700	.....	38,500	.....	9,800	.....	9,600	6,400	.....
1891–92.												
1	2,900	1,300	5,250	22,800	9,100	7,500	13,600	11,500	22,550	28,450	5,100	11,050
2	2,950	3,550	5,350	18,800	8,750	6,200	16,150	12,150	19,600	25,150	5,250	8,750
3	2,850	3,550	6,000	27,950	8,300	5,950	25,450	12,750	16,850	22,400	6,050	6,400
4	900	2,900	5,450	38,400	8,150	6,450	48,350	14,900	14,700	23,500	5,550	5,050
5	2,900	2,900	8,650	28,200	7,800	6,350	53,500	17,550	13,550	28,800	5,100	4,650
6	2,950	3,550	12,350	20,250	7,350	6,050	51,450	17,600	13,750	29,600	3,900	5,400
7	2,300	3,350	12,400	14,850	6,450	6,550	52,000	16,600	14,400	26,900	2,350	5,150
8	2,400	1,050	12,500	12,350	6,650	7,050	47,150	15,550	15,100	22,700	4,400	4,550
9	2,900	2,950	10,950	10,100	6,850	8,150	39,300	14,450	14,350	17,750	4,250	4,700
10	3,000	2,950	9,400	9,800	6,750	8,850	34,800	12,950	13,850	14,700	4,250	3,650
11	1,700	2,900	8,150	12,600	6,500	11,700	31,350	11,500	12,050	13,950	4,200	2,650
12	3,600	2,950	7,350	9,150	6,250	11,000	25,850	11,300	10,100	12,800	5,000	4,200
13	3,050	3,950	6,300	11,350	5,250	11,800	20,800	13,750	9,650	11,600	9,050	4,250
14	2,950	4,150	6,200	27,500	5,650	10,700	17,400	17,400	8,600	10,150	11,350	4,500
15	2,950	3,850	6,050	63,100	6,150	8,950	15,250	18,700	8,050	9,050	12,950	7,000
16	3,400	4,650	5,750	48,000	6,150	8,250	13,250	21,000	7,000	8,350	12,400	6,400
17	3,350	4,700	4,500	30,100	6,100	7,550	12,750	19,550	6,650	7,250	12,000	5,150
18	1,100	6,050	5,450	23,450	5,900	6,200	12,400	16,950	6,050	7,150	10,500	4,150
19	2,950	7,600	4,600	23,750	5,850	5,700	11,750	14,550	6,950	7,050	8,600	4,650
20	2,900	6,750	4,950	23,950	4,900	5,750	11,200	13,950	7,850	6,600	7,550	4,400
21	2,950	6,050	6,000	17,600	5,550	5,550	10,650	16,950	7,950	6,150	6,700	4,400
22	4,650	5,650	6,000	14,000	6,350	5,600	11,050	31,750	9,450	5,550	6,750	4,300
23	4,600	5,900	7,250	12,600	6,300	6,400	11,550	42,950	13,450	5,050	6,600	4,350
24	3,800	8,800	16,650	12,300	7,100	8,000	11,900	48,300	17,050	4,450	6,050	3,200
25	3,250	10,750	22,800	12,750	7,400	9,100	13,450	42,200	17,150	4,700	5,800	1,800
26	4,300	9,400	20,150	10,450	7,950	9,050	14,850	34,850	16,100	4,300	9,100	4,400
27	3,250	9,150	23,550	11,350	7,950	10,350	14,200	30,100	18,200	4,200	17,700	4,450
28	3,150	8,250	22,300	10,100	7,450	12,300	12,850	29,150	22,400	4,200	21,500	4,400
29	3,550	7,650	18,300	9,100	8,100	13,700	11,750	27,350	31,700	4,200	23,100	4,900
30	3,600	6,850	26,450	9,200	.....	13,400	11,600	25,400	33,150	2,750	19,050	5,750
31	3,100	.....	33,250	9,000	.....	13,050	.....	23,950	.....	4,000	14,550	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1892–93.												
1	6,250	5,900	9,700	2,600	2,950	4,700	13,800	33,250	11,250	5,050	3,850	12,800
2	5,750	6,600	9,550	6,300	3,000	4,900	18,400	40,700	10,350	4,600	4,150	9,150
3	4,650	6,400	8,600	6,850	3,000	4,700	23,450	42,350	9,100	4,150	3,900	7,650
4	4,350	6,850	8,250	6,000	2,850	3,800	22,450	67,850	7,800	4,000	3,900	5,950
5	4,350	8,600	7,650	5,250	2,100	5,150	27,850	94,350	8,700	4,250	2,550	4,350
6	4,150	10,900	7,650	4,550	3,550	4,300	31,650	80,550	9,100	4,250	2,400	5,300
7	4,150	12,250	7,750	3,800	3,450	4,350	28,350	63,200	8,950	4,000	3,750	4,200
8	4,300	12,200	7,850	3,850	3,700	2,650	22,150	51,150	9,700	2,600	3,700	3,250
9	5,550	12,500	9,150	4,400	4,950	4,800	27,000	42,800	9,250	2,550	3,850	4,900
10	4,750	15,600	9,950	4,350	6,850	6,250	38,100	38,200	8,500	4,200	4,000	5,850
11	4,800	17,350	10,450	3,900	12,450	9,500	36,950	35,550	7,850	3,900	3,750	5,250
12	5,100	17,100	10,050	3,750	14,750	11,800	36,950	34,350	7,600	3,800	3,600	4,800
13	5,000	14,400	9,200	3,600	12,700	17,050	41,000	38,200	7,250	3,800	3,600	4,400
14	4,850	12,550	8,750	3,250	9,750	20,950	46,800	34,200	9,950	3,750	2,800	3,950
15	4,950	11,600	8,100	1,550	8,450	26,450	52,000	36,250	11,850	2,600	2,700	3,750
16	5,250	19,250	7,750	3,750	8,400	25,650	48,450	34,350	11,250	750	3,200	3,650
17	4,700	40,400	7,500	3,600	8,400	21,050	39,550	42,550	9,100	3,850	3,250	5,500
18	4,550	36,500	7,450	3,200	7,350	17,300	32,700	44,600	7,950	3,950	2,750	6,100
19	5,000	31,650	6,950	3,050	6,450	13,900	28,450	37,700	7,300	2,900	1,700	5,400
20	5,250	28,800	6,600	3,050	6,450	12,350	26,350	32,000	6,450	1,650	2,950	7,000
21	5,200	25,300	4,400	2,450	5,900	11,150	26,200	27,050	5,950	2,600	4,800	8,100
22	4,500	21,400	4,500	950	5,900	10,950	28,400	24,550	5,750	3,200	4,600	7,650
23	5,750	18,050	3,200	3,100	5,900	10,000	30,700	21,500	7,200	1,150	4,750	6,050
24	5,050	14,650	2,550	3,100	5,450	9,400	30,750	19,300	7,800	3,400	4,850	6,050
25	4,950	13,350	3,150	3,050	5,200	10,300	29,750	18,700	6,950	3,250	10,200	5,650
26	4,700	12,000	2,850	3,100	5,300	14,650	29,500	17,400	6,700	3,250	8,800	4,700
27	4,450	10,500	3,000	3,050	4,900	16,900	28,650	15,250	6,900	3,400	6,750	5,200
28	4,500	10,700	3,000	2,550	4,650	17,150	27,550	14,150	6,500	3,350	9,050	4,950
29	3,450	10,700	3,600	1,150	.....	15,750	28,200	14,000	5,950	3,350	12,950	4,550
30	5,050	10,250	4,350	4,250	.....	14,750	28,550	13,000	5,800	2,450	17,700	4,400
31	5,350	.....	2,950	3,050	.....	13,800	.....	12,000	.....	4,400	17,800	.....
1893–94.												
1	4,800	9,900	8,700	8,650	6,100	5,200	11,800	18,450	16,750	6,300	2,850	1,900
2	4,350	8,650	8,150	8,150	5,750	5,000	14,150	16,800	15,200	5,450	2,650	450
3	3,800	7,750	6,350	7,400	4,550	5,350	15,150	15,150	14,750	5,500	2,600	1,600
4	4,050	6,700	6,450	7,400	4,250	5,450	15,200	14,350	15,750	5,150	1,800	1,600
5	4,050	5,550	4,400	7,350	5,350	7,400	15,750	13,950	15,100	4,300	450	1,600
6	4,050	6,400	4,500	8,150	4,750	9,050	15,700	12,450	13,550	3,900	2,750	1,600
7	3,250	5,800	5,800	8,350	4,450	16,900	14,450	13,100	12,250	4,050	2,950	1,600
8	3,250	5,650	6,150	8,750	4,600	26,600	13,550	13,000	11,050	3,700	3,450	1,600
9	4,700	5,200	6,000	7,550	4,650	32,050	14,400	12,800	9,800	4,800	3,950	150
10	4,000	4,650	5,650	7,050	3,600	31,250	14,250	11,800	8,600	4,700	3,800	2,350
11	3,900	3,650	6,500	6,250	2,950	28,800	14,100	10,750	8,800	4,800	2,600	2,350
12	3,900	3,750	5,650	6,000	4,650	33,300	13,650	9,450	8,100	4,450	600	2,350
13	3,800	4,450	5,300	5,350	4,500	35,250	13,800	8,300	7,250	4,150	3,700	2,350
14	2,900	4,150	4,650	4,650	4,500	33,600	13,350	8,950	6,500	3,100	3,000	2,350
15	4,700	4,300	4,650	6,000	4,600	29,850	13,450	8,200	6,250	2,950	2,850	2,350
16	6,300	4,050	3,250	5,750	4,600	26,500	15,050	7,600	5,250	3,900	2,750	1,300
17	5,950	4,250	4,600	5,850	3,350	22,000	16,050	6,550	1,800	3,900	2,750	4,450
18	5,850	3,400	7,250	5,950	2,900	18,900	17,450	6,350	4,600	4,050	2,250	4,000
19	4,900	2,900	7,850	5,700	4,950	19,950	18,550	6,300	4,750	4,100	450	3,400
20	4,500	4,350	7,900	4,850	5,050	31,750	21,300	6,650	5,650	4,050	2,300	3,950
21	3,200	4,300	7,100	4,050	5,800	35,950	25,150	8,200	9,250	2,400	2,300	5,050
22	3,000	4,250	6,550	5,250	5,450	33,400	32,200	8,450	9,400	1,450	2,300	4,450
23	4,100	4,850	5,600	4,750	5,150	33,550	39,100	7,800	8,800	4,300	2,300	4,150
24	5,050	5,150	5,850	4,750	4,400	32,750	42,050	7,700	7,150	4,250	2,300	4,850
25	7,650	4,600	8,050	5,150	3,650	26,650	43,300	8,100	6,850	3,550	2,300	4,700
26	7,000	3,650	15,000	5,400	4,800	20,200	40,550	11,350	5,700	3,350	450	4,350
27	6,500	4,500	17,550	5,250	5,100	21,200	34,950	11,450	5,600	3,350	1,900	2,950
28	7,400	4,550	14,450	5,050	5,450	17,800	27,800	11,950	5,100	2,650	1,900	3,050
29	10,450	7,550	12,250	6,500	.....	16,050	22,600	11,750	4,750	450	1,900	3,400
30	11,800	7,750	10,850	6,100	.....	14,600	20,350	13,000	6,700	3,100	1,900	650
31	11,250	.....	9,350	6,200	.....	13,500	.....	16,850	.....	3,050	1,900	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1894–95.												
1	2,450	5,000	3,350	3,050	3,900	3,150	9,400	21,100	9,800	4,000	2,700	2,750
2	2,450	6,900	1,650	4,100	3,700	2,550	8,450	19,900	8,800	3,800	3,700	3,000
3	2,450	6,550	5,000	4,300	1,650	1,700	8,950	18,850	9,050	3,800	3,150	4,200
4	2,450	9,000	4,900	4,300	4,550	4,100	9,450	16,200	8,200	3,500	1,350	4,550
5	2,450	11,500	4,800	2,800	3,900	3,700	9,850	14,700	8,800	3,300	3,550	3,150
6	2,450	13,300	4,850	2,650	3,650	4,200	10,150	15,500	9,600	3,300	3,250	2,950
7	600	12,500	4,700	4,400	3,250	4,800	10,550	15,000	9,400	3,000	3,350	3,550
8	3,000	10,650	3,600	4,350	3,100	4,750	13,550	14,200	8,400	3,600	3,600	350
9	3,000	9,100	3,300	4,500	2,800	6,300	38,200	13,500	8,150	3,300	4,100	2,850
10	3,050	7,800	5,100	4,700	1,300	7,450	82,950	12,750	8,850	3,900	2,950	2,850
11	6,050	6,800	4,800	5,250	3,150	6,000	89,150	11,750	7,750	3,900	1,900	2,850
12	8,000	7,850	4,950	5,600	3,050	5,200	69,650	11,500	7,600	3,700	4,600	2,850
13	6,950	6,850	8,250	5,900	2,950	5,100	50,800	12,900	5,850	3,050	3,550	2,850
14	6,450	6,750	11,950	7,100	3,050	5,950	63,700	13,350	5,400	550	3,100	2,850
15	8,050	6,600	12,150	6,000	3,150	7,850	98,850	16,300	4,400	3,950	2,950	650
16	7,450	6,850	10,600	6,200	3,600	7,850	115,000	16,800	4,450	4,200	3,500	4,200
17	6,850	5,700	11,350	6,250	950	7,800	109,000	15,250	5,150	3,000	3,500	3,250
18	5,950	6,650	11,400	5,800	3,050	7,250	88,750	12,650	4,550	2,900	1,500	3,000
19	5,650	9,000	10,150	4,700	3,000	6,050	71,250	10,700	4,700	2,850	4,550	3,050
20	5,100	8,200	8,550	4,350	2,950	5,900	58,900	10,900	4,750	2,950	4,050	3,050
21	4,450	7,150	7,550	5,700	3,050	6,050	48,900	9,750	4,750	350	3,400	3,400
22	5,800	6,550	7,200	4,950	3,100	6,300	44,350	8,950	3,100	3,000	3,250	450
23	5,450	6,500	5,400	4,850	3,500	5,550	40,750	7,800	1,050	3,150	3,850	2,700
24	5,000	5,250	4,950	5,050	750	6,350	37,600	7,750	4,250	3,200	3,600	2,700
25	4,800	6,150	3,850	4,850	3,150	7,600	34,900	6,400	3,550	2,950	1,050	2,700
26	4,750	7,650	5,050	3,850	3,150	7,850	32,600	6,200	3,500	2,900	4,050	2,700
27	3,450	7,050	4,250	3,350	3,150	9,000	29,300	8,550	4,500	2,600	3,350	2,700
28	3,700	6,500	4,000	5,150	3,100	10,150	26,050	6,050	5,150	400	3,300	2,700
29	5,050	4,700	3,100	4,900	.....	10,250	25,200	7,800	5,550	2,900	3,000	450
30	4,800	4,800	2,600	4,050	.....	9,100	22,500	9,050	4,200	2,950	4,350	2,950
31	4,800	.....	4,550	3,900	.....	8,100	.....	10,600	.....	2,950	3,600	.....
1895–96.												
1	2,950	4,000	27,100	47,350	5,500	66,950	34,400	18,300	6,550	3,900	2,300	2,700
2	3,000	5,550	22,500	39,050	4,850	112,050	36,100	16,050	6,350	3,800	2,450	2,850
3	3,150	5,900	24,900	29,700	5,350	103,450	32,300	14,700	6,450	2,350	3,900	2,700
4	4,350	7,050	26,100	23,850	4,850	65,050	24,650	15,000	6,200	750	3,700	2,700
5	3,400	6,300	21,900	12,200	4,800	37,900	19,600	14,350	5,800	1,700	3,750	2,100
6	2,700	6,250	17,500	9,300	5,550	25,100	18,550	13,900	4,650	2,050	3,650	700
7	4,750	6,150	12,050	7,750	17,150	22,050	18,350	13,700	3,850	2,900	3,800	6,150
8	4,750	6,200	10,800	7,300	20,750	19,050	17,550	13,550	5,100	3,450	2,850	7,750
9	3,150	5,650	10,800	7,600	19,700	17,950	17,700	11,900	4,900	4,450	4,100	8,050
10	3,000	6,200	9,450	7,850	17,700	16,900	19,900	11,000	7,100	6,050	4,650	7,200
11	3,350	15,150	8,800	7,100	14,300	14,050	22,700	11,050	8,850	4,500	4,000	6,450
12	2,800	16,100	7,650	7,250	11,650	10,900	26,950	10,700	8,750	4,300	3,750	4,800
13	1,700	15,000	7,500	8,250	10,600	9,350	37,300	10,700	7,750	4,150	3,750	3,900
14	9,550	22,600	7,050	8,250	9,600	9,300	59,350	11,000	6,450	4,100	3,800	4,400
15	9,250	21,300	7,050	7,700	8,750	8,900	71,100	11,000	6,600	4,000	2,050	4,100
16	7,550	24,700	7,850	7,900	7,600	8,550	77,500	9,050	5,950	4,150	1,300	3,800
17	6,200	23,350	7,450	7,700	7,800	8,950	84,450	7,800	5,700	4,100	2,800	3,650
18	5,200	22,000	7,000	5,800	6,400	10,350	89,200	7,650	5,050	2,650	2,800	3,450
19	3,150	19,850	7,200	6,450	6,250	10,750	88,600	7,700	5,050	450	2,800	2,350
20	3,100	18,550	7,250	7,400	6,600	25,250	81,200	7,350	4,250	4,200	2,800	4,650
21	4,950	17,550	7,750	7,100	6,400	29,250	71,050	7,150	3,500	3,900	2,800	6,200
22	4,850	17,800	10,850	7,100	5,550	25,150	61,950	6,900	4,300	3,400	2,800	6,850
23	3,500	17,050	18,250	6,950	5,150	22,300	54,600	5,900	4,400	3,700	550	8,450
24	3,500	16,950	23,800	6,900	6,550	18,400	46,450	5,650	4,450	4,300	3,300	8,100
25	4,600	22,450	20,950	6,200	6,800	15,300	38,300	6,050	4,300	4,150	3,350	6,850
26	3,600	23,600	21,750	6,000	6,500	15,050	30,800	5,800	4,350	4,100	3,300	4,550
27	400	33,550	22,300	6,800	6,300	19,750	26,750	5,850	2,550	4,550	2,950	4,250
28	4,300	36,450	28,500	6,350	6,100	23,250	23,150	4,850	3,300	4,450	2,700	4,500
29	3,500	37,150	25,050	6,100	9,600	22,250	20,900	5,350	4,050	4,300	1,900	4,450
30	3,450	32,450	21,200	6,100	.....	24,050	19,500	5,150	4,150	4,350	450	4,400
31	3,350	.....	31,600	6,000	.....	26,150	.....	5,100	.....	4,000	2,800	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1896–97.												
1	4,650	12,050	17,900	3,350	3,900	4,400	21,900	32,950	22,900	10,200	22,350	6,200
2	4,700	11,750	15,750	3,350	3,600	3,550	22,950	27,800	19,300	9,550	18,950	6,150
3	3,600	11,550	12,300	3,350	3,600	3,500	25,150	28,000	16,750	9,900	16,050	5,300
4	3,500	12,100	8,250	4,700	3,750	4,450	24,600	27,100	16,100	9,550	13,950	4,550
5	4,550	12,800	6,450	4,700	4,300	5,700	27,050	27,500	18,100	8,100	12,800	4,600
6	4,600	26,800	6,500	7,550	2,950	7,550	37,100	26,350	19,600	7,650	12,750	4,800
7	5,200	30,450	8,550	10,100	2,550	11,750	46,250	23,900	20,350	7,950	10,550	4,650
8	5,250	25,300	8,850	10,350	11,100	12,150	44,900	20,550	19,050	9,950	8,750	4,500
9	5,550	23,900	9,700	8,400	13,600	10,550	42,150	17,050	20,200	13,200	8,950	4,450
10	4,750	21,000	13,900	8,600	14,250	10,250	45,150	16,150	60,600	11,950	8,400	4,450
11	4,300	17,650	13,800	7,500	11,150	12,550	36,250	14,500	75,350	9,350	9,150	3,650
12	4,500	15,800	11,000	6,650	8,400	15,700	31,350	15,400	56,950	8,550	13,650	2,550
13	4,250	15,050	10,400	5,900	6,500	15,300	26,600	17,500	41,300	13,050	12,600	5,050
14	6,600	12,550	9,900	5,100	7,250	13,050	25,550	35,800	35,300	37,000	10,200	3,900
15	10,200	11,600	9,350	4,750	6,150	12,250	28,700	44,050	30,000	57,250	8,150	3,450
16	20,100	11,400	5,950	3,750	5,100	10,300	41,300	36,550	24,500	58,350	9,600	3,450
17	16,850	10,700	4,300	3,450	5,200	9,150	48,550	30,000	21,050	50,200	9,150	4,000
18	14,750	10,000	4,650	5,100	5,250	8,200	50,950	24,900	17,800	39,350	11,050	3,700
19	13,950	9,650	5,000	4,900	4,950	8,100	49,350	19,700	15,250	31,350	12,300	2,250
20	13,300	9,150	5,150	4,900	3,950	15,650	44,500	16,850	12,300	23,250	11,800	3,700
21	14,150	7,900	6,050	4,400	3,600	23,750	39,700	14,600	13,300	18,750	9,750	3,550
22	18,300	8,150	5,250	4,700	4,950	23,750	34,500	13,600	13,800	17,550	9,050	3,550
23	22,100	9,450	4,750	3,350	4,900	25,850	30,250	12,450	12,750	19,350	8,650	3,950
24	21,850	8,750	3,900	3,000	4,800	34,650	27,300	13,400	11,250	21,400	8,750	4,650
25	20,500	8,400	3,650	4,100	4,850	33,350	29,050	14,050	10,000	20,550	9,400	4,450
26	19,500	10,500	4,200	3,500	4,850	25,850	34,650	16,250	8,300	21,100	9,700	4,050
27	16,800	13,300	3,400	3,350	3,700	18,600	37,350	18,950	7,900	27,300	9,500	5,150
28	14,500	13,600	4,550	3,600	2,700	16,750	37,250	20,350	9,950	24,800	7,850	4,950
29	13,000	14,600	4,400	4,200	.....	16,350	36,950	23,050	9,700	44,150	7,050	4,900
30	12,050	17,550	4,250	2,300	.....	16,250	37,050	24,600	9,900	53,650	7,250	4,850
31	12,200	.....	4,300	2,400	.....	19,350	.....	24,350	.....	32,900	6,450	.....
1897–98.												
1	4,950	3,850	21,050	7,650	7,000	8,100	43,500	23,800	14,300	6,000	4,750	5,000
2	3,450	4,550	16,650	7,500	6,600	8,400	37,300	22,150	12,950	6,050	3,800	4,650
3	3,350	17,050	12,800	7,700	7,050	8,050	29,550	20,450	11,550	5,600	3,450	3,600
4	5,000	19,400	10,700	7,650	7,350	8,050	25,850	20,550	10,250	4,800	3,650	3,550
5	4,350	15,850	11,150	7,750	6,900	7,500	22,450	22,100	8,650	4,550	4,700	4,000
6	3,400	13,200	16,800	7,650	6,350	6,950	20,450	22,650	9,200	4,250	4,350	5,500
7	3,150	10,100	15,600	8,100	7,500	7,800	19,400	20,850	9,000	3,300	4,800	6,850
8	3,250	9,850	18,700	9,050	7,350	8,000	18,400	17,950	8,800	3,450	6,250	6,550
9	2,950	9,150	16,850	8,600	7,350	8,550	16,950	17,300	8,000	3,850	6,150	5,950
10	1,300	14,900	16,500	8,750	7,650	9,650	16,050	15,600	8,050	2,850	5,750	5,050
11	3,550	18,050	15,850	8,450	7,850	11,750	18,650	14,400	7,600	4,400	5,450	3,550
12	3,000	17,850	16,650	8,300	8,100	16,950	20,000	14,400	8,300	4,250	4,800	5,050
13	3,900	16,200	22,950	8,750	9,250	30,700	21,950	18,250	10,500	3,850	4,000	4,850
14	5,100	13,700	23,600	13,150	12,250	66,500	23,950	22,000	15,000	3,450	3,150	3,500
15	5,300	12,900	59,850	12,300	12,450	74,900	26,300	22,450	17,900	3,600	4,750	3,900
16	4,400	11,550	70,650	15,450	11,750	64,700	35,750	23,850	17,000	3,200	3,800	4,700
17	2,050	15,400	63,850	14,700	10,400	53,500	37,000	22,500	15,850	600	3,500	3,550
18	4,900	19,300	52,600	11,850	9,900	50,750	34,200	19,200	13,800	4,050	3,450	650
19	4,700	17,700	37,050	10,000	9,350	55,850	31,500	16,550	12,200	3,350	4,600	4,200
20	4,350	14,600	25,550	9,700	8,750	59,750	28,500	15,150	14,800	3,500	3,950	3,550
21	3,900	12,700	18,950	12,950	9,850	76,150	27,350	14,500	14,350	3,250	4,550	3,400
22	4,650	12,650	15,750	16,050	9,350	68,600	25,400	12,350	13,800	3,200	5,350	3,300
23	2,900	12,350	14,100	14,650	9,250	52,100	23,300	12,450	12,800	3,200	4,850	3,200
24	3,050	11,150	13,200	15,000	9,200	49,050	28,450	13,050	11,750	2,250	4,750	3,000
25	4,400	8,250	10,350	13,100	9,000	44,250	46,850	14,550	10,500	4,100	6,700	6,950
26	3,750	9,000	8,950	11,300	8,800	37,900	50,450	23,300	9,050	4,350	7,550	12,000
27	3,700	22,050	10,450	10,500	7,650	35,450	46,700	23,600	9,750	4,450	5,850	12,550
28	3,150	29,550	10,450	9,700	8,600	38,500	39,200	26,800	9,100	4,600	4,950	12,050
29	3,100	28,300	9,550	8,500	.....	41,550	33,500	22,350	8,500	4,500	6,950	10,050
30	3,050	25,250	9,050	8,050	.....	43,900	28,450	19,450	7,550	3,400	6,950	8,000
31	1,750	.....	8,950	7,650	.....	46,100	.....	16,900	.....	1,500	6,150	.....

Daily discharge, in second-feet, of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1898–99.												
1	6,300	16,250	12,050	6,500	5,300	11,400	15,650	58,850	7,850	3,050	5,050	2,500
2	4,650	14,050	12,600	7,750	5,050	11,400	14,300	59,500	7,800	2,100	4,400	2,500
3	5,600	12,700	11,500	8,000	6,200	10,750	15,200	57,850	6,050	3,200	3,700	1,250
4	5,050	11,550	11,100	8,550	4,600	9,550	15,350	52,100	5,750	2,500	3,850	4,150
5	6,600	10,700	14,150	9,950	5,000	9,700	15,450	45,900	6,250	3,900	2,700	3,650
6	23,000	8,950	15,250	13,400	5,250	13,900	15,850	38,550	5,400	3,350	700	3,400
7	15,500	10,350	14,800	13,850	5,200	16,150	17,700	31,700	5,450	3,700	3,550	3,450
8	12,550	9,850	13,050	11,900	5,000	16,500	23,200	26,750	5,400	3,400	3,550	3,300
9	12,200	9,700	11,550	12,000	5,100	15,200	26,200	22,600	5,250	1,900	3,200	2,850
10	11,650	10,850	12,250	10,750	5,000	13,650	33,400	19,950	4,000	6,950	3,150	400
11	9,550	28,750	9,900	9,350	4,500	12,050	35,200	17,900	4,750	6,250	3,100	2,350
12	8,600	29,150	9,400	8,150	5,350	11,950	35,850	16,600	5,350	6,850	2,850	2,350
13	7,800	21,350	5,800	10,450	5,250	18,650	35,000	15,400	5,300	5,850	800	2,350
14	7,200	18,800	5,850	6,050	4,050	22,150	45,250	13,800	4,100	5,150	2,700	2,350
15	7,200	16,600	6,150	7,100	3,950	22,400	61,500	14,500	4,500	4,000	2,700	2,350
16	9,800	14,950	6,400	9,700	4,300	19,500	73,050	13,400	4,750	3,250	2,700	2,350
17	11,550	13,700	6,050	11,750	5,150	17,700	67,250	12,800	3,650	5,150	2,700	650
18	10,400	13,500	6,600	11,850	4,400	15,050	59,800	12,050	4,650	4,400	2,700	2,250
19	10,150	16,200	7,250	10,400	4,600	13,500	64,850	11,300	5,100	4,650	2,700	2,250
20	11,950	24,550	6,500	9,000	5,350	14,700	73,700	10,150	4,900	4,550	750	2,250
21	12,650	26,650	6,500	7,900	5,650	14,000	73,350	10,100	5,100	4,750	2,400	2,250
22	13,250	23,750	7,200	6,550	5,700	12,500	69,850	10,900	5,200	3,200	2,400	2,250
23	16,000	20,700	8,550	7,250	6,500	11,750	70,500	10,450	4,850	1,200	2,400	2,250
24	15,450	18,000	11,550	7,000	7,450	11,000	77,600	10,150	3,050	4,150	2,400	650
25	13,450	16,450	12,300	7,700	7,650	10,200	79,600	8,850	1,750	4,250	2,400	3,050
26	12,050	14,200	12,650	8,050	8,250	8,600	82,500	8,200	4,900	7,700	2,400	2,950
27	17,850	12,750	11,000	7,900	9,550	9,800	82,100	7,250	4,600	8,150	750	3,150
28	22,400	10,850	9,650	7,100	10,050	9,550	75,150	6,600	3,300	6,750	2,500	3,150
29	21,000	8,850	8,450	5,200	.....	11,900	67,700	7,200	4,150	5,150	2,500	3,300
30	18,700	10,550	7,600	5,950	.....	14,650	61,100	6,600	4,800	3,950	2,500	3,850
31	18,300	.....	7,700	5,150	.....	16,950	.....	6,100	.....	5,150	2,500	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1899.				1899.				1899.			
1	850	3,550	5,100	11	2,550	4,850	5,300	21	2,350	5,350	10,650
2	3,250	5,500	4,050	12	2,550	4,400	5,450	22	550	4,600	11,650
3	3,250	8,050	650	13	2,550	5,850	5,200	23	2,800	5,400	9,900
4	3,250	9,150	5,500	14	2,550	5,350	11,300	24	2,800	5,400	8,850
5	3,250	9,650	4,200	15	550	5,300	15,100	25	2,800	4,100	8,950
6	3,250	10,400	5,850	16	2,350	5,200	14,000	26	2,800	3,350	7,800
7	3,250	8,500	7,150	17	2,350	5,250	11,850	27	2,800	5,600	5,650
8	850	7,300	6,300	18	2,350	3,750	8,650	28	2,800	5,450	5,550
9	2,550	6,200	3,900	19	2,350	2,100	6,300	29	450	5,400	5,300
10	2,550	5,650	2,450	20	2,350	5,500	7,500	30	3,200	4,650	4,100
								31	3,150	.....	700

Monthly discharge of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899.

[Drainage area, 8,390 miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1880.					
January	24,700	6,550	9,650	1.15	1.33
February	24,850	7,330	14,800	1.76	1.90
March	40,150	6,850	15,300	1.82	2.10
April	44,100	7,300	20,600	2.46	2.74
May	23,900	5,650	11,500	1.37	1.58
June	8,750	1,750	4,160	.496	.55
July	8,300	1,950	3,640	.434	.50
August	4,650	0	2,170	.259	.30
September	2,350	0	1,700	.203	.23

Monthly discharge of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1880–81.					
October	4,950	0	2,260	0.269	0.31
November	11,050	2,100	6,100	.727	.81
December	3,850	1,800	3,050	.364	.42
January	2,950	0	2,520	.300	.35
February	13,050	0	5,730	.683	.71
March	19,500	9,150	13,600	1.62	1.87
April	48,500	7,750	22,400	2.67	2.98
May	49,050	12,350	27,000	3.22	3.71
June	11,450	3,200	6,210	.740	.83
July	7,600	1,000	3,950	.471	.54
August	7,050	450	3,900	.465	.54
September	4,750	0	2,950	.352	.39
The year	49,050	0	8,290	.988	13.46
1881–82.					
October	6,600	0	3,200	.381	.44
November	18,850	5,900	11,300	1.35	1.51
December	46,850	4,750	15,800	1.88	2.17
January	34,000	4,050	8,790	1.05	1.21
February	22,000	4,400	9,100	1.08	1.12
March	43,650	8,950	19,500	2.32	2.68
April	25,800	11,400	18,200	2.17	2.42
May	38,500	12,700	20,200	2.41	2.78
June	35,300	5,750	17,600	2.10	2.34
July	9,250	1,600	5,410	.645	.74
August	3,650	250	2,800	.334	.39
September	45,000	250	7,950	.948	1.06
The year	46,850	0	11,700	1.39	18.86
1882–83.					
October	6,800	3,500	4,610	.549	.63
November	3,850	1,050	3,360	.400	.45
December	3,700	850	2,740	.327	.38
January	3,700	400	2,630	.313	.36
February	5,750	2,150	3,930	.468	.49
March	8,400	3,150	5,270	.628	.72
April	68,300	7,550	33,300	3.97	4.43
May	29,350	12,200	19,600	2.34	2.70
June	17,200	5,000	10,800	1.29	1.44
July	8,550	1,750	5,610	.669	.77
August	4,100	950	3,060	.365	.42
September	2,500	250	1,880	.224	.25
The year	68,300	250	8,050	.959	13.04
1883–84.					
October	8,350	950	3,540	.422	.49
November	10,100	2,650	5,070	.604	.67
December	6,650	1,550	3,910	.466	.54
January	8,800	4,850	6,210	.740	.85
February	28,100	5,450	14,300	1.70	1.83
March	71,900	7,300	22,000	2.62	3.02
April	70,800	20,400	40,200	4.79	5.34
May	35,450	17,550	26,300	3.13	3.61
June	15,500	5,050	8,940	1.07	1.19
July	6,200	3,000	4,360	.520	.60
August	5,800	1,000	3,190	.380	.44
September	5,450	500	2,820	.336	.37
The year	71,900	500	11,700	1.39	18.95
1884–85.					
October	6,100	1,100	4,020	.479	.55
November	17,650	4,000	8,380	.999	1.11
December	28,100	4,700	11,200	1.33	1.53
January	36,650	7,050	15,300	1.82	2.10
February	9,150	5,250	7,140	.851	.89
March	6,150	3,600	4,810	.573	.66
April	63,950	8,500	37,400	4.46	4.98
May	33,550	7,100	16,500	1.97	2.27
June	17,600	3,100	7,010	.836	.93
July	12,050	2,950	7,050	.840	.97
August	13,550	2,950	6,150	.733	.85
September	8,150	3,050	5,580	.665	.74
The year	63,950	1,100	10,900	1.30	17.58

Monthly discharge of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1885–86.					
October	18,400	3,750	7,980	0.951	1.10
November	47,200	7,500	20,800	2.48	2.77
December	24,600	4,750	11,300	1.35	1.56
January	58,950	7,600	15,900	1.90	2.19
February	37,500	7,200	16,100	1.92	2.00
March	22,750	6,700	9,600	1.14	1.31
April	80,150	16,550	37,300	4.45	4.96
May	19,600	7,500	12,800	1.53	1.76
June	12,900	4,550	7,500	.894	1.00
July	4,350	850	3,050	.364	.42
August	3,950	550	2,710	.323	.37
September	5,100	50	2,490	.297	.33
The year	80,150	50	12,200	1.45	19.77
1886–87.					
October	8,850	1,000	4,370	.521	.60
November	34,800	5,850	14,700	1.75	1.95
December	21,050	6,150	10,400	1.24	1.43
January	39,150	6,650	11,800	1.41	1.63
February	31,900	7,800	13,700	1.63	1.70
March	9,900	7,200	8,160	.973	1.12
April	85,500	8,100	44,300	5.28	5.89
May	72,500	10,050	31,100	3.71	4.28
June	27,650	5,150	12,700	1.51	1.68
July	32,300	5,550	11,000	1.31	1.51
August	26,750	5,650	12,000	1.43	1.65
September	8,500	3,650	5,520	.658	.73
The year	85,500	1,000	14,900	1.78	24.17
1887–88.					
October	6,200	3,300	4,480	.534	.62
November	18,700	3,500	6,770	.807	.90
December	27,600	6,100	11,900	1.42	1.64
January	13,750	6,850	8,830	1.05	1.21
February	14,100	6,600	8,550	1.02	1.10
March	32,400	5,650	12,000	1.43	1.65
April	90,900	27,150	38,900	4.64	5.18
May	99,750	16,700	47,800	5.70	6.57
June	17,600	6,300	10,500	1.25	1.40
July	7,600	1,600	4,310	.514	.59
August	8,150	1,100	4,690	.559	.64
September	42,000	4,900	13,000	1.55	1.73
The year	99,750	1,100	14,300	1.70	23.23
1888–89.					
October	23,050	13,600	18,000	2.15	2.48
November	38,050	10,950	22,600	2.69	3.00
December	59,300	5,700	19,600	2.34	2.70
January	31,000	9,200	16,700	1.99	2.29
February	11,100	5,600	7,290	.869	.90
March	24,600	5,750	13,600	1.62	1.87
April	37,800	15,750	26,500	3.16	3.53
May	29,050	8,500	13,800	1.64	1.89
June	21,750	6,300	13,100	1.56	1.74
July	18,500	5,750	9,120	1.09	1.26
August	21,050	2,700	9,240	1.10	1.27
September	17,450	1,350	6,060	.722	.81
The year	59,300	1,350	14,700	1.75	23.74
1889–90.					
October	22,350	4,900	11,500	1.37	1.58
November	37,250	12,050	19,000	2.26	2.52
December	37,650	9,350	20,500	2.44	2.81
January	23,200	9,100	15,000	1.79	2.06
February	35,000	8,550	14,800	1.76	1.83
March	37,250	9,650	19,700	2.35	2.71
April	46,250	13,600	29,400	3.50	3.90
May	46,750	23,800	31,300	3.73	4.30
June	25,950	6,400	13,200	1.57	1.75
July	7,450	1,550	4,900	.584	.67
August	18,450	550	6,020	.718	.83
September	32,100	6,900	14,400	1.72	1.92
The year	46,750	550	16,600	1.98	26.88

Monthly discharge of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1890–91.					
October	44,000	3,850	18,300	2.18	2.51
November	26,950	7,750	14,100	1.68	1.87
December	7,250	4,100	5,830	.695	.80
January	31,400	6,050	14,200	1.69	1.95
February	44,950	8,850	17,000	2.03	2.11
March	63,250	15,150	29,900	3.56	4.10
April	67,300	20,250	41,300	4.92	5.49
May	21,650	9,800	15,100	1.80	2.08
June	11,900	4,050	7,410	.883	.99
July	9,600	2,900	5,130	.611	.70
August	10,950	1,600	5,300	.632	.73
September	5,600	1,200	3,890	.464	.52
The year	67,300	1,200	14,800	1.76	23.85
1891–92.					
October	4,650	900	3,040	.362	.42
November	10,750	1,050	5,140	.613	.68
December	33,250	4,500	11,300	1.35	1.56
January	63,100	9,000	19,500	2.32	2.68
February	9,100	4,900	6,860	.818	.88
March	13,700	5,550	8,490	1.01	1.16
April	53,500	10,650	22,600	2.69	3.00
May	48,300	11,300	21,200	2.53	2.92
June	33,150	6,050	14,300	1.70	1.90
July	29,600	2,750	12,400	1.48	1.71
August	23,100	2,350	8,930	1.06	1.22
September	11,050	1,800	4,960	.591	.66
The year	63,100	900	11,600	1.38	18.79
1892–93.					
October	6,250	3,450	4,860	.579	.67
November	40,400	5,900	15,800	1.88	2.10
December	10,450	2,550	6,660	.794	.92
January	6,850	950	3,560	.424	.49
February	14,750	2,100	6,240	.744	.77
March	26,450	2,650	11,800	1.41	1.63
April	52,000	13,800	31,000	3.69	4.12
May	94,350	12,000	36,200	4.31	4.97
June	11,850	5,750	8,160	.973	1.09
July	5,050	750	3,370	.402	.46
August	17,800	1,700	5,440	.648	.75
September	12,800	3,250	5,680	.677	.76
The year	94,350	750	11,600	1.38	18.73
1893–94.					
October	11,800	2,900	5,300	.632	.73
November	9,900	2,900	5,220	.622	.69
December	17,550	3,250	7,500	.894	1.03
January	8,750	4,050	6,250	.745	.86
February	6,100	2,900	4,640	.553	.58
March	35,950	5,000	22,300	2.66	3.07
April	43,300	11,800	21,000	2.50	2.79
May	18,450	6,300	10,900	1.30	1.50
June	16,750	1,800	8,700	1.04	1.16
July	6,300	450	3,850	.459	.53
August	3,950	450	2,320	.277	.32
September	5,050	150	2,700	.322	.36
The year	43,300	150	8,400	1.00	13.62
1894–95.					
October	8,050	600	4,610	.549	.63
November	13,300	4,700	7,530	.897	1.00
December	12,150	1,650	6,060	.722	.83
January	7,100	2,650	4,740	.565	.65
February	4,550	750	2,990	.356	.37
March	10,250	1,700	6,260	.746	.86
April	115,000	8,450	45,300	5.40	6.02
May	21,000	6,050	12,300	1.47	1.70
June	9,800	1,050	6,110	.728	.81
July	4,200	350	3,030	.361	.42
August	4,600	1,050	3,280	.391	.45
September	4,550	350	2,740	.327	.36
The year	115,000	350	8,720	1.04	14.10

Monthly discharge of Connecticut River at Holyoke, Mass., for the years ending Sept. 30, 1880–1899—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1895–96.					
October	9,550	400	4,100	0.489	0.56
November	37,150	4,000	17,100	2.04	2.28
December	31,600	7,000	15,800	1.88	2.17
January	47,350	5,800	10,900	1.30	1.50
February	20,750	4,800	8,780	1.05	1.13
March	112,050	8,550	27,200	3.24	3.74
April	89,200	17,550	42,400	5.05	5.63
May	18,300	4,850	9,680	1.15	1.33
June	8,850	2,550	5,360	.639	.71
July	6,050	450	3,650	.435	.50
August	4,650	450	2,960	.353	.41
September	8,450	700	4,770	.569	.63
The year	112,050	400	12,700	1.51	20.59
1896–97.					
October	22,100	3,500	11,000	1.31	1.51
November	30,450	7,900	14,100	1.68	1.87
December	17,900	3,400	7,620	.908	1.05
January	10,350	2,300	5,010	.597	.69
February	14,250	2,550	5,780	.689	.72
March	34,650	3,500	14,500	1.73	1.99
April	50,950	21,900	35,500	4.23	4.72
May	44,050	12,450	22,500	2.68	3.09
June	75,350	7,900	22,300	2.66	2.97
July	58,350	7,650	23,500	2.80	3.23
August	22,350	6,450	10,800	1.29	1.49
September	6,200	2,250	4,310	.514	.57
The year	75,350	2,250	14,800	1.76	23.90
1897–98.					
October	5,300	1,300	3,670	.437	.50
November	29,550	3,850	14,900	1.78	1.99
December	70,650	8,950	21,800	2.60	3.00
January	16,050	7,500	10,300	1.23	1.42
February	12,450	6,350	8,670	1.03	1.07
March	76,150	6,950	35,500	4.23	4.88
April	50,450	16,050	29,200	3.48	3.88
May	26,800	12,350	19,100	2.28	2.63
June	17,900	7,550	11,400	1.36	1.52
July	6,050	600	3,800	.453	.52
August	7,550	3,150	4,960	.591	.68
September	12,550	650	5,420	.646	.72
The year	76,150	600	14,100	1.68	22.81
1898–99.					
October	23,000	4,650	12,200	1.45	1.67
November	29,150	8,850	15,800	1.88	2.10
December	15,250	5,800	9,720	1.16	1.34
January	13,850	5,150	8,780	1.05	1.21
February	10,050	3,950	5,690	.678	.71
March	22,400	8,600	13,800	1.64	1.89
April	82,500	14,300	49,400	5.89	6.57
May	59,500	6,100	20,800	2.48	2.86
June	7,850	1,750	4,930	.588	.66
July	8,150	1,200	4,470	.533	.61
August	5,050	700	2,670	.318	.37
September	4,150	400	2,530	.302	.34
They year	82,500	400	12,600	1.50	20.33
1899.					
October	3,250	450	2,560	.305	.35
November	10,400	2,100	5,690	.678	.76
December	15,100	650	6,930	.826	.95

Days of deficiency in discharge of Connecticut River at Holyoke, Mass., during the years ending Sept. 30, 1881–1899.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.										
		1880–81	1881–82	1882–83	1883–84	1884–85	1885–86	1886–87	1887–88	1888–89	1889–90	1890–91
1,000	114	12	6	11	4	.....	5	.....	.....	.....	1	.....
1,500	170	14	8	17	9	1	7	2	1	1	2	2
2,000	227	28	10	25	12	1	8	2	3	1	3	3
2,500	284	40	18	53	12	1	23	4	4	4	5	3
3,000	341	113	37	93	41	4	55	4	7	6	11	9
3,500	398	155	66	134	73	18	80	17	18	12	14	17
4,000	455	180	88	191	107	39	92	27	42	20	31	24
4,500	511	193	97	212	145	73	97	29	65	23	35	50
5,000	568	206	107	230	164	95	105	33	80	25	40	65
5,500	625	220	112	241	184	122	114	37	88	27	45	92
6,000	682	229	125	248	202	147	121	48	102	39	48	107
6,500	738	235	130	253	209	161	124	69	123	46	56	123
7,000	795	243	143	262	215	179	136	84	143	61	63	137
7,500	852	249	154	268	227	191	148	102	174	76	73	151
8,000	909	254	163	275	232	211	162	131	197	86	78	158
8,500	966	258	168	282	240	220	173	151	208	92	82	159
9,000	1,020	264	174	285	249	228	185	172	219	100	89	163
9,500	1,080	274	181	288	251	245	191	186	226	111	100	166
10,000	1,140	278	194	292	254	251	202	207	231	122	109	180
11,000	1,250	284	209	297	261	262	219	221	243	145	122	194
12,000	1,360	292	225	301	266	275	240	231	255	170	130	208
14,000	1,590	301	251	306	278	292	272	257	269	197	166	233
16,000	1,820	314	275	318	284	299	286	273	277	225	196	253
20,000	2,270	330	302	336	292	318	310	295	295	288	254	284
25,000	2,840	339	334	345	310	331	322	315	307	321	297	304
30,000	3,410	345	345	352	333	340	332	326	316	342	323	322
35,000	3,980	351	354	352	340	348	340	330	332	358	341	332
40,000	4,550	355	358	354	350	353	348	337	338	363	358	343
50,000	5,680	365	365	356	355	359	360	345	347	363	365	350
75,000	8,520	.....	.....	365	366	365	364	362	361	365	.....	365
100,000	11,400	.....	.....	.....	.....	.....	365	365	366	.....	.....	.....

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.							
		1891–92	1892–93	1893–94	1894–95	1895–96	1896–97	1897–98	1898–99
1,000	114	1	2	8	10	6	.....	2	7
1,500	170	3	5	10	14	7	.....	3	9
2,000	227	6	7	24	19	10	.....	5	11
2,500	284	9	11	38	25	17	3	7	30
3,000	341	28	29	54	59	37	7	10	47
3,500	398	38	57	71	109	55	17	36	65
4,000	455	49	86	89	142	76	40	58	75
4,500	511	71	112	122	165	108	58	73	90
5,000	568	86	142	159	197	126	88	95	104
5,500	625	100	161	184	215	135	101	103	133
6,000	682	116	176	204	228	149	105	108	141
6,500	738	143	187	220	243	176	111	114	151
7,000	795	156	198	230	256	188	115	123	163
7,500	852	168	204	241	263	205	118	128	174
8,000	909	178	217	251	277	223	126	144	185
8,500	966	188	223	262	286	228	137	159	192
9,000	1,020	196	230	270	294	235	146	172	199
9,500	1,080	209	238	275	303	241	155	186	202
10,000	1,140	212	246	277	307	244	169	194	215
11,000	1,250	223	258	280	317	253	183	206	233
12,000	1,360	241	264	289	323	259	195	215	252
14,000	1,590	274	280	304	332	264	229	240	280
16,000	1,820	290	290	323	337	273	245	264	301
20,000	2,270	312	304	336	342	299	276	293	321
25,000	2,840	331	312	342	344	325	306	317	332
30,000	3,410	345	330	349	347	337	323	330	337
35,000	3,980	354	340	359	349	343	334	334	339
40,000	4,550	356	350	362	351	350	346	342	343
50,000	5,680	362	359	365	354	352	357	350	345
75,000	8,520	366	363	.....	359	359	364	364	360
100,000	11,400	.....	365	.....	363	364	365	365	365

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were less than the amounts given in the columns for discharge and horsepower. In using this table allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

MILLERS RIVER BASIN.

GENERAL FEATURES.

Millers River is formed in the town of Ashburnham by the union of Bear Meadow and Bluefield brooks. Bluefield Brook, which drains the larger area and is therefore considered the continuation of the river, rises in the southwestern part of the town of New Ipswich, Hillsborough County, N. H., in a small pond on the south slope of Barrett Mountain, and flows southwestward 3½ miles to its junction with Bear Meadow Brook. From this point the general course of the Millers is southwesterly and westerly to Millers Falls, where it turns sharply and flows northward to its junction with the Connecticut. The river is about 45 miles long and drains 394 square miles. The principal tributary streams from the north are Priest Brook, Tully River, Orcutt, Moss, and Keyup brooks; from the south, Otter River, Beaver Brook, Mill Creek, and Whetstone, Osgood, and Wickett brooks.

The basin contains a large number of ponds, the largest being Lake Monomonac. Many of these ponds are regulated for the benefit of storage, and for this reason the flow is not flashy, presenting in this respect a striking contrast to Deerfield River, which enters the Connecticut from the west and drains a somewhat larger area. The precipitation in the basin ranges from 45 inches in the upper part to 40 inches in the lower.

Much of the region drained is well wooded, hardwood growths predominating. The principal rock of the region is granite, and clay and sand are abundant.

The water power afforded by the river has been fairly well developed, especially between Athol and Millers Falls, but much of the power now lost in the rapids below Erving might be conserved and the value of the present power units might be materially increased by utilizing more of the available storage sites.

MILLERS RIVER AT WENDELL DEPOT, MASS.

LOCATION.—At the railroad bridge at Wendell Depot, immediately below the dam of the Athol Gas & Electric Co.

DRAINAGE AREA.—353 square miles.

RECORDS AVAILABLE.—Discharge measurements June 5, 1909, to September 22, 1913.

GAGE.—Chain gage at the bridge 1909–1912; in 1913 two gages—one in the pond above the hydroelectric plant and the other in the tailrace.

DISCHARGE MEASUREMENTS.—Made from the railroad bridge or by wading. Measurements for rating wheels made from footbridge across tailrace.

CHANNEL AND CONTROL.—Bed rough; control at high and medium stages, a dam 1½ miles below station.

EXTREMES OF DISCHARGE.—Maximum discharge, approximately 4,500 second-feet, morning of March 28, 1913.

WINTER FLOW.—Discharge relation affected by ice during short periods.

REGULATION.—At ordinary stages the river is under complete control of the power plant of the Athol Gas & Electric Co., which was put into operation June, 1910. Power plants farther upstream, at Orange and Athol, also affect distribution of flow.

ACCURACY.—The extent and rapidity of diurnal fluctuations incident to the operation of the power plant of the Athol Gas & Electric Co. made it impossible to base estimates of daily discharge on two gage readings a day, and an attempt was made to utilize records of sluice gates and wheel-gate openings and ratings of discharge through the wheels at the power plant. Owing to the range and rapidity of changes in gate openings and the necessity of installing recording instruments on the wheel governors it was found to be impracticable to secure accurate discharge data at this place.

Records of stage can not be used for the computation of discharge and are therefore not published.

Discharge measurements of Millers River at Wendell Depot, Mass., during 1909–1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
June 5	D. M. Wood	2.00	598	Feb. 20	F. B. Saunders	1.42	208
22	do	1.80	463	27	do	1.82	332
Aug. 3	do	1.12	104	28	do	2.15	499
27	do	1.38	229	Mar. 11	do	3.10	936
Oct. 8	Norcross and Wood	1.21	132	15	do	2.90	879
8	do	.67	[a] 23	17	do	3.00	799
Dec. 17	D. M. Wood	1.69	376	28	do	5.30	2,750
1910.				29	do	4.80	2,480
				30	do	5.10	2,630
Feb. 14	D. M. Wood	[b] 2.34	400	31	do	4.92	2,530
Mar. 2	do	6.40	3,360	Apr. 2	do	2.95	1,090
5	T. W. Norcross	4.21	2,300	4	do	2.48	1,030
9	D. M. Wood	4.89	2,840	4	do	2.49	805
July 19	H. B. Alvord	.....	[c] 97	6	do	3.25	1,130
19	do	.....	[c] 131	7	do	4.38	2,200
Sept. 14	W. G. Hoyt	.84	[d] 34	8	do	4.55	2,230
1911.				8	do	4.23	2,150
Jan. 12	F. J. Shuttleworth	[b] 1.45	204	1912.			
24	F. B. Saunders	1.34	186	Feb. 14	G. H. Canfield	[b] 2.69	438
29	do	1.69	270	Nov. 22	C. S. De Golyer	1.90	176
Feb. 11	do	1.25	124				

Date.	Made by—	Gage height.		Discharge.	Wheel gate openings.
		Pond gage.	Tail-race gage.		
1913.		*Feet.*	*Feet.*	*Sec.-ft.*	
Aug. 28	C. H. Pierce	99.25	.....	[d] 20.0	Gates all closed.
28 [e]	do	99.75	.....	[d] 25.5	Do.
Sept. 21	do	94.32	78.16	147	0.49 opening on two wheels.
Sept. 22	do	95.68	77.89	259	0.49 opening on four wheels.
22	do	96.16	77.78	204	0.67 opening on two wheels.
22	do	96.08	78.03	275	0.91 opening on two wheels.
22	do	95.92	78.36	342	0.65 opening on four wheels.

[a] Not reliable; partly estimated.
[b] Discharge relation affected by ice.
[c] Discharge through gates only.
[d] Leakage in wheel pit.
[e] Wheel gates opened and closed between times of making the two measurements. Results show variable amount of leakage.

MILLERS RIVER AT ERVING, MASS.

LOCATION.—At downstream end of chair factory at Erving, about 8 miles above the confluence of Millers River with Connecticut River and below all important tributaries.

DRAINAGE AREA.—372 square miles.

RECORDS AVAILABLE.—August 1, 1914, to September 30, 1915.

GAGES.—Staff gage attached to factory August 1, 1914, to June 30, 1915; water-stage recorder July 1 to September 30, 1915.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed composed of coarse gravel and bowlders; control for low stages is a short distance below the gage and is practically permanent.

EXTREMES OF STAGE.—Maximum stage recorded: 5.5 feet at 4 p. m., February 25, 1915; discharge, 4,850 second-feet. Minimum discharge, practically no flow at various times, water being stored farther upstream.

WINTER FLOW.—Discharge relation somewhat affected by ice.

REGULATION.—Operation of power plants at Athol, Orange, Wendell, and Erving affects the flow to such an extent that mean daily discharge can not be accurately determined from two gage heights a day.

ACCURACY.—Rating curve fairly well defined, partly by measurements obtained subsequent to September 30, 1915. Monthly records prior to July 1, 1915, obtained as explained in the footnote to the daily discharge table, are somewhat uncertain.

Discharge measurements of Millers River at Erving, Mass., during 1914–15.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
July 24	R. S. Barnes	[a] 1.68	146	Nov. 24	R. S. Barnes	1.88	192
28	do	[a] 1.80	138				
Aug. 21	C. H. Pierce	2.07	226	1915.			
Sept. 22	R. S. Barnes	1.97	204	Aug. 18	Hardin Thweatt	2.80	643
				Sept. 22	do	2.33	404

[a] Determined from a reference point.

Daily discharge, in second-feet, of Millers River at Erving, Mass., for the years ending Sept. 30, 1914–15.

[Staff gage.]

Day.	August.		September.		Day.	August.		September.	
	A. M.	P. M.	A. M.	P. M.		A. M.	P. M.	A. M.	P. M.
1914.					1914—Contd.				
1	205	58	213	173	17	202	213	216	130
2	a 87	(c)	220	187	18	220	141	205	157
3	202	163	224	150	19	187	138	202	111
4	220	153	236	173	20	224	183	a 8	(c)
5	224	150	209	170	21	232	400	202	180
6	224	150	a 31	(c)	22	320	340	209	114
7	385	224	35	118	23	a 202	(c)	202	116
8	213	0	108	153	24	340	236	205	170
9	a 0	0	124	136	25	248	150	216	187
10	0	81	136	127	26	205	209	224	130
11	56	89	27	121	27	232	205	a 5	(c)
12	216	160	34	37	28	202	153	205	69
13	232	163	a 24	(c)	29	220	130	173	39
14	240	127	202	166	30	a 48	(c)	4	127
15	252	0	205	190	31	228	325	.....	.....
16	a 0	0	202	194					

Day.	October.		November.		February.		March.	
	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.
1914–15.								
1	166	124	a 35	(c)	.....	.....	1,060	1,230
2	205	124	83	35	.....	.....	1,290	1,160
3	202	69	74	209	.....	.....	1,310	788
4	a 4	(c)	213	46	.....	.....	1,510	804
5	153	127	101	85	.....	.....	836	644
6	147	94	220	54	.....	.....	788	630
7	144	98	205	72	.....	.....	a 588	(c)
8	157	150	a 0	(c)	.....	.....	932	630
9	157	85	89	150	.....	.....	600	618
10	136	141	228	69	.....	.....	612	612
11	a 7	(c)	236	76	.....	.....	612	624
12	98	30	52	76	.....	.....	624	570
13	232	74	224	58	.....	.....	576	445
14	150	78	157	124	.....	.....	a 385	(c)
15	160	76	a 4	(c)	.....	.....	558	355
16	213	72	144	160	1,540	1,330	415	492
17	220	83	220	44	1,360	1,300	360	486
18	a 22	(c)	141	60	1,370	1,090	335	612
19	228	153	213	72	1,260	923	468	528
20	228	150	150	83	960	812	504	305
21	213	157	147	35	a 748	(c)	a 365	(c)
22	252	124	a 7	(c)	788	637	540	385
23	224	157	150	220	812	780	350	450
24	224	133	213	39	869	887	430	445
25	a 11	(c)	220	41	3,010	4,850	320	504
26	160	89	33	(c)	4,480	4,100	534	564
27	272	127	150	138	3,320	2,820	456	430
28	236	41	256	58	a 2,060	(c)	a435	(c)
29	224	31	a 41	(c)	.....	.....	504	400
30	209	63	220	202	.....	.....	315	335
31	94	46	.....	.....	.....	.....	425	272

a Sunday.
b Discharge estimated by comparison with readings made twice a day.
c Gage read in morning only. Afternoon discharge taken as mean of discharge for preceding and following mornings in computing monthly records.

Daily discharge, in second-feet, of Millers River at Erving, Mass., for the years ending Sept. 30, 1914–15—Continued.

Day.	April.		May.		June.		July.		August.		September.	
	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.	A. M.	P. M.
1915.												
1	708	582	1,510	1,170	474	340	240	284	a 450	(c)	400	522
2	305	355	a 1,310	(c)	280	121	300	456	651	534	252	420
3	435	456	1,150	1,110	213	370	672	788	665	708	320	405
4	a 198	(c)	1,150	1,050	224	138	a 820	(c)	564	2,730	280	355
5	492	435	950	896	124	130	732	716	3,210	2,910	a 153	(c)
6	370	658	860	828	a 48	(c)	570	606	2,640	2,560	256	3
7	335	588	740	748	232	360	546	606	2,390	2,390	106	180
8	630	686	588	686	220	53	390	540	a 2,000	(c)	183	462
9	804	732	a 618	(c)	224	114	2,730	2,820	1,720	1,360	157	415
10	878	679	672	658	202	96	2,560	2,560	1,370	1,240	420	320
11	a 923	(c)	686	606	228	180	a 2,080	(c)	1,140	1,130	173	252
12	1,820	2,230	665	686	121	111	1,630	1,410	1,620	828	a 173	(c)
13	2,230	2,080	651	658	a 52	(c)	1,220	950	923	950	276	268
14	1,860	1,510	492	462	236	350	606	780	980	960	213	345
15	1,420	923	400	410	260	220	748	764	a 844	(c)	248	365
16	1,190	1,100	a 330	(c)	240	153	658	748	724	740	205	445
17	1,020	780	564	450	228	205	430	658	624	732	252	345
18	a 716	(c)	350	430	240	202	a 205	(c)	564	724	260	252
19	679	665	462	480	127	183	335	510	355	724	a 41	(c)
20	570	708	325	480	a 60	(c)	330	492	350	679	232	370
21	612	672	236	370	410	360	256	300	320	325	205	365
22	612	637	187	445	228	325	516	546	a 213	(c)	244	330
23	588	594	a 209	(c)	224	425	612	672	700	679	288	456
24	570	700	486	430	252	160	582	546	370	644	248	450
25	a 300	(c)	276	510	240	213	a 335	(c)	390	665	345	176
26	492	510	280	300	144	194	345	340	380	630	a 173	(c)
27	606	630	280	335	a 53	(c)	498	600	400	576	380	292
28	612	450	368	445	220	325	335	552	380	582	240	202
29	400	450	202	440	236	170	395	606	a 240	(c)	248	40
30	570	732	a 180	(c)	244	248	564	630	474	296	244	224
31			180	480			564	606	310	498		

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1915.				1915.				1915.			
1	284	a 468	385	12	1,510	878	a 153	23	534	558	232
2	390	445	335	13	1,130	914	264	24	440	498	260
3	665	588	345	14	748	869	232	25	a 350	510	127
4	a 724	1,120	395	15	788	a 748	236	26	325	492	a 166
5	693	2,730	a 236	16	780	644	252	27	462	516	244
6	510	2,310	141	17	644	665	220	28	440	528	213
7	534	2,150	144	18	a 468	582	b 190	29	462	a 209	98
8	724	1,670	248	19	486	522	a b 135	30	522	305	187
9	2,560	1,430	224	20	492	504	b 200	31	528	330	
10	2,310	1,180	355	21	b 285	430	190				
11	a 1,760	1,000	260	22	450	a 340	220				

a Sunday.
b Discharge estimated by comparison with readings made twice a day.
c Gage read in morning only. Afternoon discharge taken as mean of discharge for preceding and following mornings in computing monthly records.

NOTE.—Discharge computed from a rating curve fairly well defined below 1,800 second-feet, several discharge measurements obtained subsequent to Sept. 30, 1915, being used to determine the curve. Mean discharge computed from automatic gage records. A discharge record computed from two readings a day, made about 8 a. m. and 4. p. m. on staff gage, is given for July, August, and September, 1915, subsequent to installation of automatic gage, for the purpose of comparing record obtained from two readings a day with that obtained by means of the automatic gage. Monthly discharge for period prior to installation of automatic gage obtained by applying a reduction factor of 0.90 to means from readings twice a day, this factor being determined by a comparative study of results subsequent to installation of automatic gage. Discharge relation affected by ice at various times during December, 1914, and January and February, 1915; discharge for these months estimated from observer's record and climatic data.

Monthly discharge of Millers River at Erving, Mass., for the years ending Sept. 30, 1914–15.

[Drainage area, 372 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1914.						
August			160	0.430	0.50	B.
September			125	.336	.37	B.
1914–15.						
October			119	.320	.37	B.
November			103	.277	.31	B.
December			82.5	.222	.26	D.
January			652	1.75	2.02	C.
February			1,010	2.72	2.83	C.
March			530	1.42	1.64	B.
April			695	1.87	2.09	B.
May			518	1.39	1.60	B.
June			190	.511	.57	B.
July	2,560	284	742	1.99	2.29	A.
August	2,730	209	843	2.27	2.62	A.
September	395	98	230	.618	.69	A.
The year			471	1.27	17.29	

MOSS BROOK AT WENDELL DEPOT, MASS.

LOCATION.—Just above junction with Millers River, at Wendell Depot.

DRAINAGE AREA.—12.5 square miles (approximate).

RECORDS AVAILABLE.—June 4 to October 16, 1909; April 25 to August 27, 1910.

GAGE.—In 1909, vertical staff attached to highway bridge 100 feet above mouth of stream; in 1910, vertical staff in pond above a weir about one-fourth mile above mouth of the stream.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of stream rough and rocky; one channel at all stages. Control for gage used in 1909 was drowned out by the Athol Gas & Electric Co.'s dam on Millers River; control for 1910 was a sharp-crested weir constructed about one-fourth mile above mouth of stream.

EXTREMES OF DISCHARGE.—Maximum discharge for 24 hours: 70 second-feet, April 27, 1910; minimum discharge for 24 hours: 0.3 second-foot, June 30, 1910.

ACCURACY.—Discharge record only approximate.

Discharge measurements of Moss Brook at Wendell Depot, Mass., during 1909–10.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*	1910.		*Feet.*	*Sec.-ft.*
June 5	D. M. Wood	1.21	8	Apr. 25	D. M. Wood	.55	19.3
22	do	1.18	6	July 19	H. B. Alvord	.20	2.8
Aug. 3	do	.94	1.5	Sept. 14	W. G. Hoyt	.10	1.77
27	do	.96	2				
Oct. 8	Norcross and Wood	.99	6				
Dec. 17	D. M. Wood		10.5				

NOTE.—The gage heights for 1909 refer to the gage at the meter station at the bridge. The gage heights for 1910 refer to the gage at the weir.

Daily discharge, in second-feet, of Moss Brook at Wendell Depot, Mass., for 1909–10.

Day.	June.	July.	Aug.	Sept.	Oct.	Day.	June.	July.	Aug.	Sept.	Oct.
1909.						1909.					
1	.....	3.1	2.4	2.7	3.6	16	7.4	2.4	4.6	3.6	2.7
2	.....	3.1	2.2	2.7	3.6	17	6.8	3.6	7.4	3.5	.....
3	.....	3.1	1.8	2.5	3.6	18	15.1	3.3	10.3	3.3	.....
4	7.4	3.1	1.8	2.4	3.6	19	15.1	3.1	9.6	2.7	.....
5	7.4	3.5	3.3	2.7	3.3	20	9.6	2.7	4.6	2.5	.....
6	25.8	3.1	3.1	2.7	3.3	21	9.0	2.7	4.6	2.5	.....
7	17.4	3.1	3.1	2.5	3.1	22	7.4	2.4	3.5	2.4	.....
8	12.9	3.1	2.9	2.5	4.6	23	5.7	2.4	3.1	2.4	.....
9	9.9	2.7	2.7	2.4	4.2	24	5.7	3.1	2.9	2.7	.....
10	9.0	2.7	2.4	2.4	3.8	25	3.6	2.7	2.9	4.6	.....
11	12.2	2.7	1.8	2.7	3.3	26	3.1	2.7	2.7	8.2	.....
12	10.6	2.7	1.8	2.7	3.3	27	3.1	2.7	2.5	11.9	.....
13	9.0	2.7	2.7	2.5	3.1	28	4.6	2.7	2.4	24.0	.....
14	8.8	2.7	2.5	2.5	3.1	29	4.2	2.7	2.4	16.5	.....
15	8.2	2.7	2.4	2.5	2.7	30	3.5	2.4	2.4	8.2	.....
						31	.....	2.4	2.2	.....	.....

NOTE.—Discharge determined from a poorly defined rating curve. Discharge Aug. 17, 1909, interpolated.

Day.	Apr.	May.	June.	July.	Aug.	Day.	Apr.	May.	June.	July.	Aug.
1910.						1910.					
1	.....	26	7.7	.....	1.0	16	.....	10.2	6.4	.....	1.6
2	.....	23	6.4	.....	1.0	17	.....	9.5	14.6	.....	1.7
3	.....	20	5.7	.....	3.2	18	.....	12.2	12.6	.....	1.8
4	.....	28	4.1	.....	2.3	19	.....	19.6	9.5	1.3	1.9
5	.....	29	5.5	.....	5.3	20	.....	13.5	6.4	2.2	2.0
6	.....	25	6.9	.....	2.7	21	.....	12.2	4.4	2.2	2.2
7	.....	19.0	10.4	.....	2.2	22	.....	12.2	3.2	2.2	2.2
8	.....	21	7.6	.....	1.7	23	.....	10.4	2.6	1.3	2.2
9	.....	17.1	5.7	.....	1.2	24	.....	9.3	1.7	1.2	2.1
10	.....	19.0	6.4	.....	1.2	25	16.2	7.4	1.3	1.0	2.1
11	.....	17.1	34	.....	3.2	26	43	7.1	.9	1.1	1.9
12	.....	14.9	27	.....	2.4	27	70	6.4	.8	.9	1.9
13	.....	13.5	19.9	.....	1.3	28	45	5.7	1.0	1.0	.....
14	.....	12.2	12.4	.....	1.4	29	33	4.7	.6	1.0	.....
15	.....	11.3	8.1	.....	1.5	30	29	3.7	.3	1.1	.....
						31	.....	6.4	.....	1.0	.....

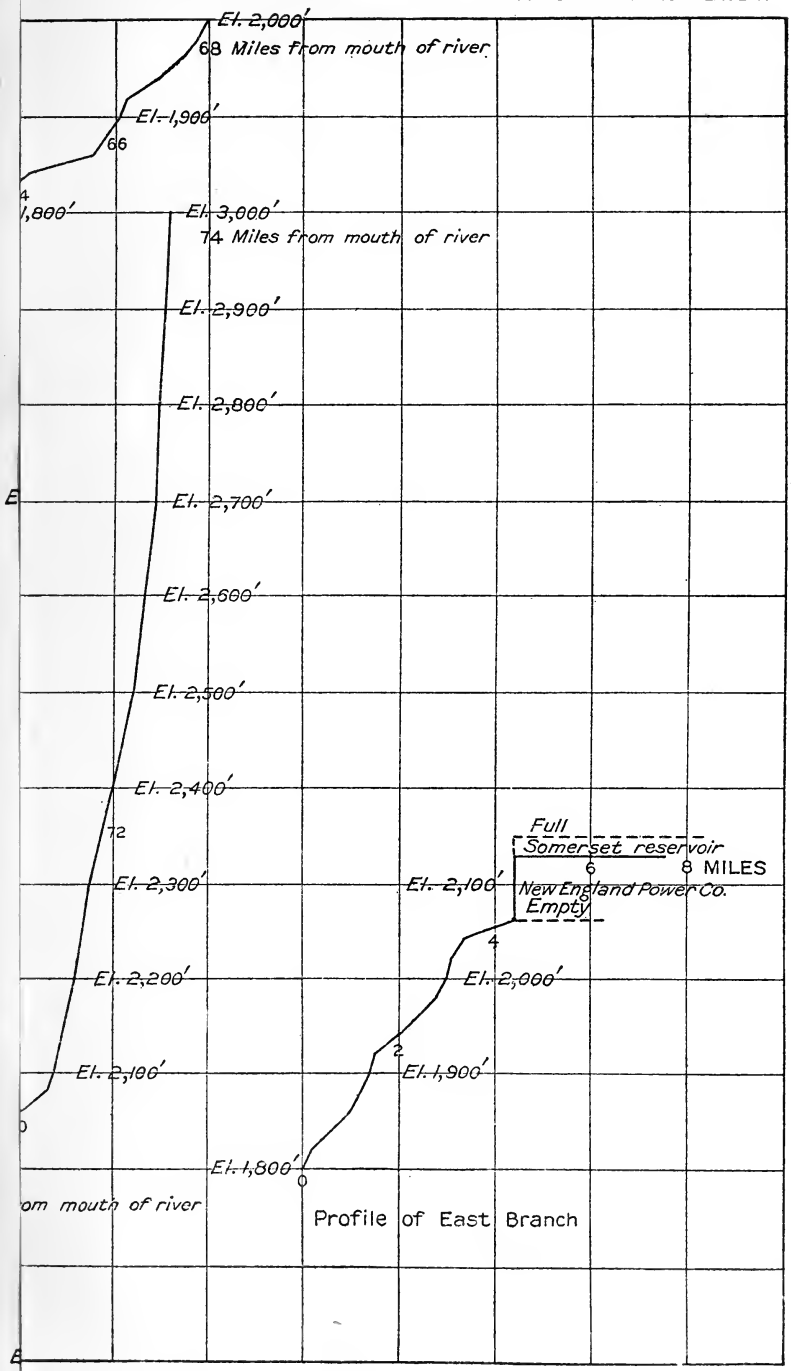
NOTE.—Discharge determined from a rating curve well defined below discharge of 20 second-feet. The values, however, are somewhat vitiated by variable leakage underneath the weir, particularly during the later part of June.

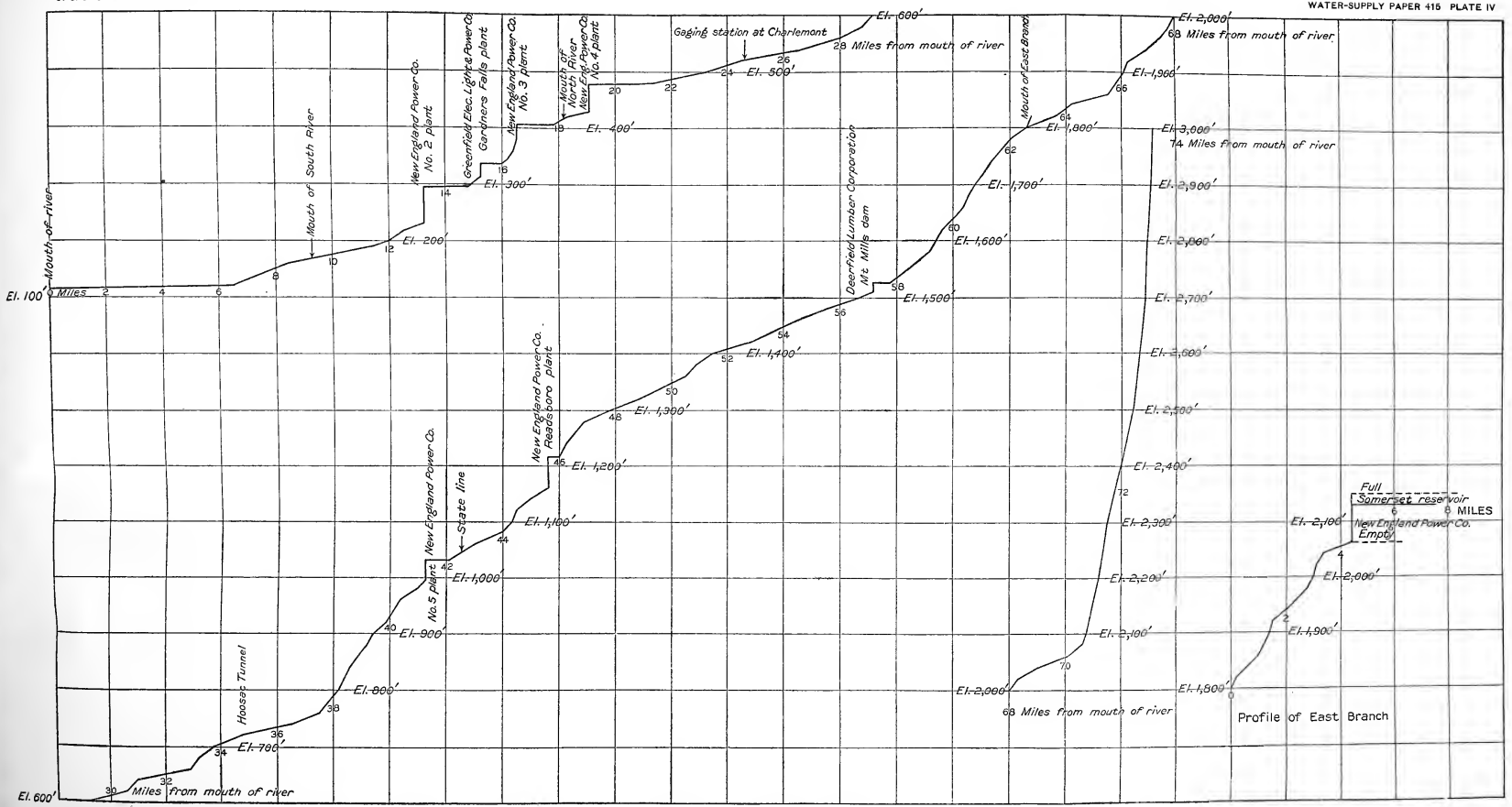
Discharge interpolated June 5, 12, 19, July 24, Aug. 7, and 14–20.

Monthly discharge of Moss Brook at Wendell Depot, Mass., for 1909–10.

[Drainage area, 12.5 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1909.						
June 4–30	25.8	3.1	8.98	0.718	0.71	D.
July	3.6	2.4	2.84	.227	.26	D.
August	10.3	1.8	3.39	.271	.31	D.
September	24.0	2.4	4.58	.366	.41	D.
October 1–16	4.6	2.7	3.43	.274	.16	D.
1910.						
April 25–30	70	16.2	39.4	3.18	.71	D.
May	29	3.7	14.4	1.16	1.34	D.
June	34	.3	7.80	.629	.70	D.
July 19–31	2.2	.9	1.35	.109	.05	D.
August 1–27	5.3	1.0	2.04	.165	.17	D.


El. 2,000′
68 Miles from mouth of river
El. 1,900′
66
El. 3,000′
74 Miles from mouth of river
El. 2,900′
El. 2,800′
El. 2,700′
El. 2,600′
El. 2,500′
El. 2,400′
72
El. 2,300′
El. 2,200′
El. 2,100′
El. 2,100′
Full
Somerset reservoir
6
8 MILES
New England Power Co.
Empty
4
El. 2,000′
2
El. 1,900′
El. 1,800′
0
om mouth of river
Profile of East Branch



PROFILE OF DEERFIELD RIVER.

DEERFIELD RIVER BASIN.

GENERAL FEATURES.

Deerfield River, the second largest tributary of Connecticut River in Massachusetts, rises in the towns of Stratton and Somerset, Vt., and follows a general southeasterly course to its junction with Connecticut River near Greenfield, Mass. In Vermont it receives the East Branch at Searsburg, the North Branch at Wilmington, and the West Branch at Readsboro. North River, entering at Shelburne Falls, and Green River at Greenfield are the most important tributaries in Massachusetts. The length of the river above the Massachusetts State line is 30 miles; below the Massachusetts line the river is 42 miles long.

Much of the basin is wooded and but little land is under cultivation except along the lower stretches. Most of the slopes are steep, elevations in the upper parts of the basin exceeding 3,800 feet above sea level.

The mean annual precipitation in the headwater areas of the basin is probably about 48 inches; in the lower part it is several inches less. Winters are usually severe. The average depth of snowfall for January and February at Jacksonville, Vt., is about 25 inches, and the mean temperature for these months is about 18° F.

Owing to the steep rocky slopes the river throughout its course is quick falling and rapid and is naturally flashy. A large storage reservoir at Somerset, Vt., put into use in 1913, has a marked effect on the distribution of run-off during the spring and summer months. A system of power plants has been constructed which utilizes very efficiently a large part of the energy of the river. The larger tributaries afford several possible power sites, and some additional developments are still possible on the main stream. A generalized profile of the river is given in Plate IV, and views of the gaging station at Charlemont and power plants near Shelburne Falls in Plates V, VI, and VII.

DEERFIELD RIVER AT HOOSAC TUNNEL, MASS.

LOCATION.—At wooden highway bridge near Hoosac Tunnel railroad station about 4½ miles below Dunbar Brook, 3 miles above Pelham Brook, and about 4 miles above Cold Brook.

DRAINAGE AREA.—257 square miles.

RECORDS AVAILABLE.—August 8, 1909, to November 30, 1913; also a discharge measurement made October 29, 1906.

GAGE.—Chain fastened to downstream side of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed of coarse gravel; very rough; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 10.7 feet, 6.30 a. m., October 24, 1912; discharge, 17,200 second-feet. Minimum stage recorded: 0.68 foot, 7 a. m., July 7, 1912; discharge, 6 second-feet.

WINTER FLOW.—Discharge relation seriously affected by ice.

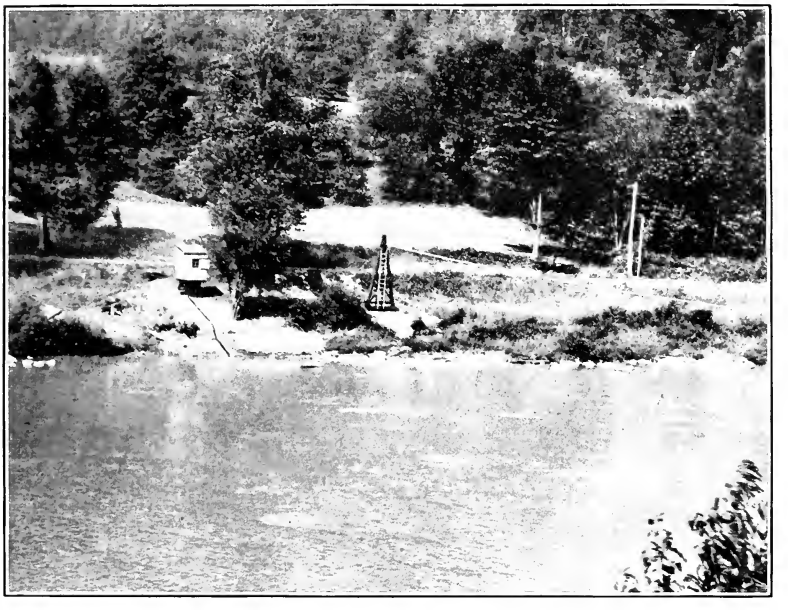
REGULATION.—Distribution of flow seriously affected by operation of numerous mills on the main river and its tributaries above the station and during 1913 by storage in a reservoir at Somerset, Vt.

ACCURACY.—Individual determinations of discharge good, but the diurnal fluctuation is so large that mean daily or monthly discharge has not been computed.

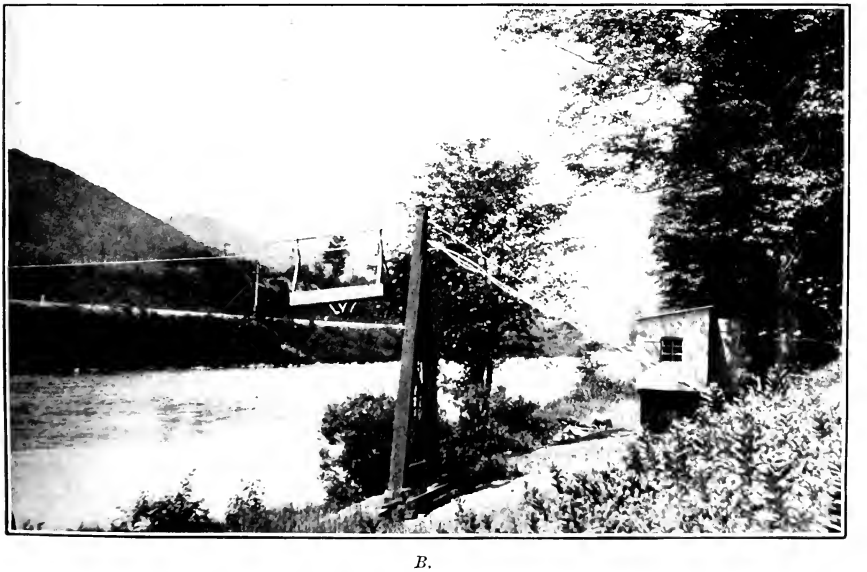
Discharge measurements of Deerfield River at Hoosac Tunnel, Mass., during 1906–1913.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1906.		*Feet.*	*Sec.-ft.*	1911.		*Feet.*	*Sec.-ft.*
Oct. 29	F. E. Pressey		66.0	Mar. 21	F. J. Shuttleworth	[a] 2.03	218
1909.				31	C. C. Covert	3.32	1,060
July 17	D. M. Wood	1.75	159	Apr. 25	C. S. De Golyer	4.41	2,200
Aug. 7	do	1.95	211	June 17	G. H. Canfield	2.79	700
27	do	1.12	34.7	July 13	W. G. Hoyt	1.11	44.7
Oct. 5	do	1.94	207	13	do	.99	27.2
5	T. W. Norcross	1.94	209	13	do	.98	25.4
Dec. 16	D. M. Wood	[a] 2.69	272	Aug. 19	Frank Weber	1.86	157
1910.				20	do	1.64	130
Feb. 16	D. M. Wood	[a] 2.36	328	21	do	1.14	50
Mar. 1	do	6.92	[b] 6,410	Nov. 30	do	3.70	1,390
4	T. W. Norcross	4.02	[b] 1,720	1912.			
8	D. M. Wood	4.01	[b] 1,590	Jan. 11	C. A. Moore	[a] 3.28	203
25	do	5.37	[b] 3,390	Feb. 15	G. H. Canfield	[a] 3.32	241
Apr. 26	do	5.15	[b] 3,130	16	do	[a] 2.44	123
Sept. 16	W. G. Hoyt	1.40	85.5	Mar. 6	Alexander McMillan	[a] 2.68	130
Oct. 25	C. C. Covert	1.45	107	6	do	[a] 3.00	159
Dec. 19	W. G. Hoyt	[a] 1.26	34.0	13	do	[a] 3.66	359
1911.				1913.			
Jan. 12	F. J. Shuttleworth	[a] 2.42	397	Feb. 15	De Golyer and Barnes	[a] 2.40	277
31	do	[a] 2.47	417	Mar. 14	C. S. De Golyer	4.72	2,750
Mar. 6	do	[a] 1.92	169	Sept. 25	R. S. Barnes	1.98	217

[a] Discharge relation affected by ice.
[b] Velocity observations at 1 foot depth; coefficient of 0.80 applied.

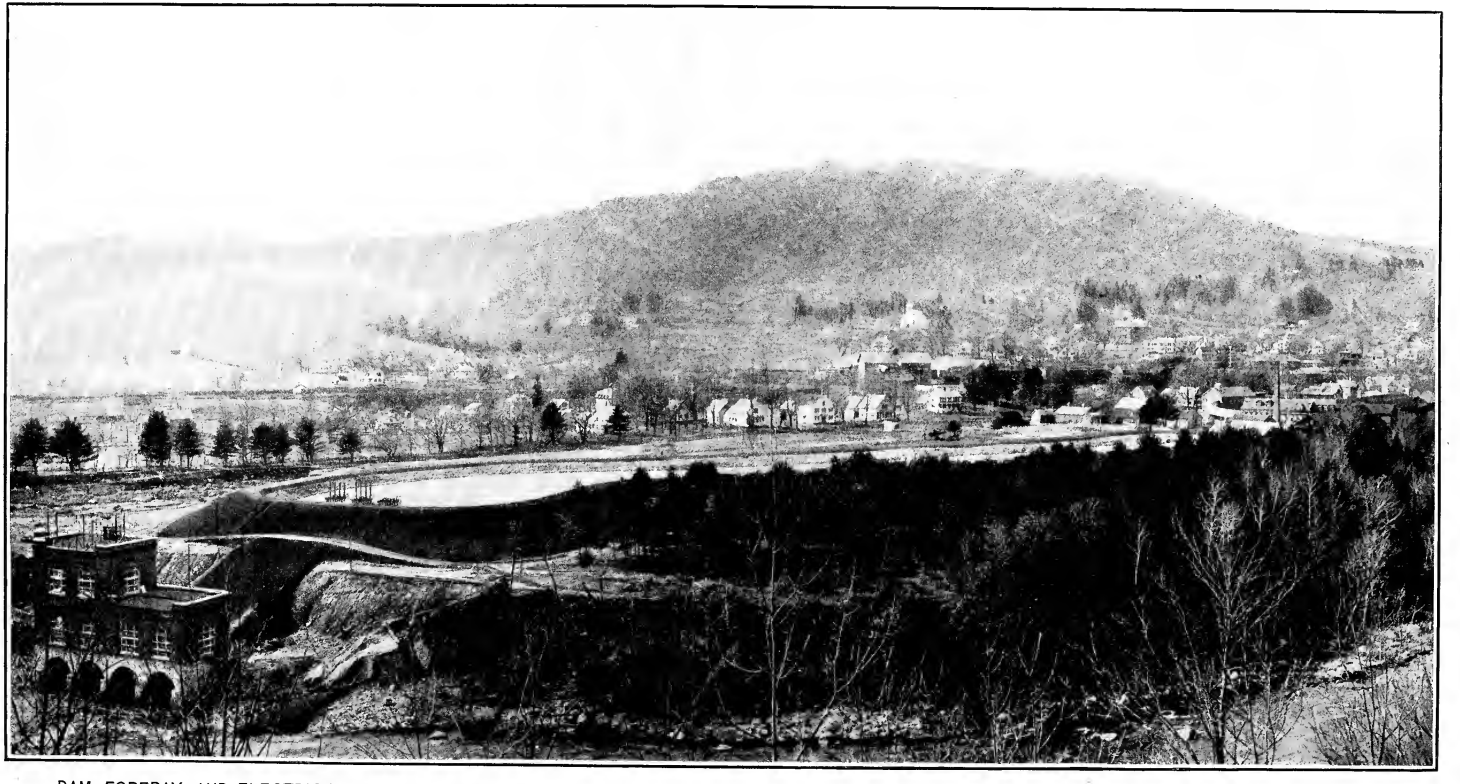


A.



B.

VIEWS OF GAGING STATION ON DEERFIELD RIVER AT CHARLEMONT, MASS.



DAM, FOREBAY, AND ELECTRIC-POWER STATION OF NEW ENGLAND POWER CO. ON DEERFIELD RIVER AT SHELBURNE FALLS, MASS., NOVEMBER 10, 1912.

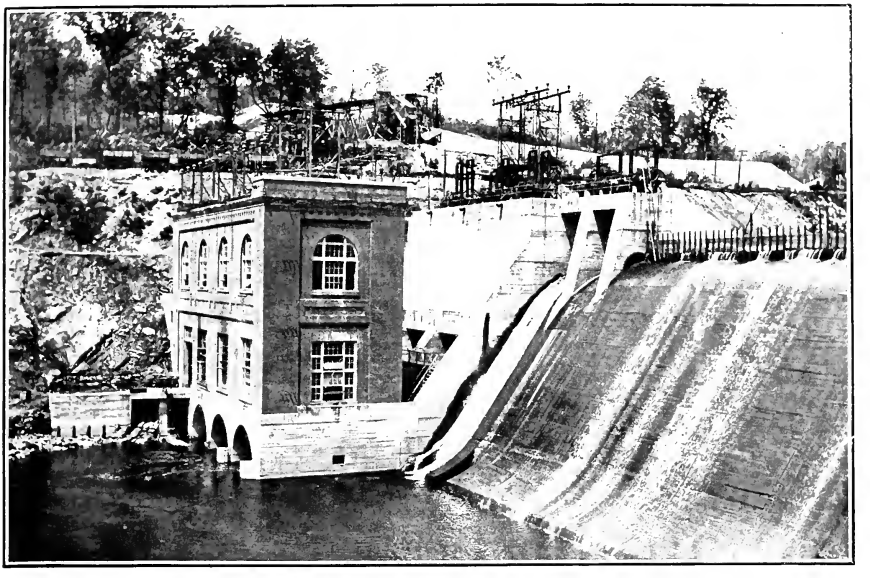
Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913.

Day.	August.				September.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1909.								
1					7.00	28	6.00	39
2					7.00	44	6.00	46
3					7.00	39	6.00	38
4					7.00	37	6.00	36
5					7.00	28	6.00	27
6					7.00	29	6.00	34
7			3.15	221	7.00	231	6.00	185
8	7.00	234	6.00	103	7.00	163	6.00	145
9	7.00	133	6.00	84	7.00	28	6.00	199
10	7.00	39	6.00	67	7.00	52	6.00	173
11	7.00	28	6.00	39	7.00	52	6.00	99
12	7.00	28	6.00	67	7.00	67	6.00	27
13	7.00	52	6.00	84	7.00	67	6.00	234
14	7.00	28	6.00	39	7.00	103	6.00	103
15	7.00	52	6.00	28	7.00	94	6.00	84
16	7.00	234	6.00	398	7.00	28	6.00	39
17	7.00	450	6.00	860	7.00	94	6.00	103
18	7.00	1,190	6.00	932	7.00	39	6.00	103
19	7.00	852	6.00	620	7.00	94	6.00	67
20	7.00	374	6.00	234	7.00	72	6.00	52
21	7.00	215	6.00	116	7.00	52	6.00	52
22	7.00	99	6.00	92	7.00	39	6.00	52
23	7.00	88	6.00	86	7.00	39	6.00	67
24	7.00	81	6.00	77	7.00	202	6.00	202
25	7.00	58	6.00	52	7.00	202	6.00	173
26	7.00	39	6.00	28	7.00	160	6.00	67
27	7.00	28	6.00	28	7.00	84	6.00	103
28	7.00	29	6.00	30	7.00	704	6.00	3,490
29	7.00	31	6.00	34	7.00	1,640	6.00	1,180
30	7.00	38	6.00	150	7.00	796	6.00	780
31	7.00	28	6.00	111				

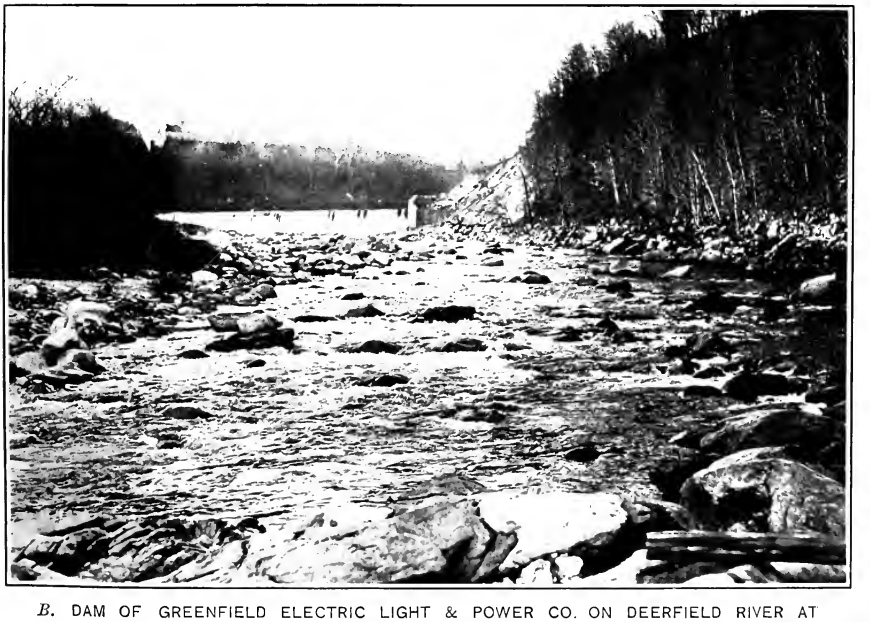
Day.	October.				November.			
1	7.00	450	5.45	445	7.00	182	5.00	244
2	7.00	398	5.45	389	7.00	94	5.00	179
3	7.00	308	5.45	234	7.00	120	5.00	147
4	7.00	173	5.45	173	7.00	208	5.00	155
5	7.00	103	5.45	67	7.00	185	5.00	88
6	7.00	160	5.45	160	7.00	124	5.00	103
7	7.00	173	5.45	173	7.00	38	5.00	40
8	7.00	173	5.45	103	7.00	47	5.00	147
9	7.00	147	5.45	76	7.00	155	5.00	64
10	7.00	147	5.45	173	7.00	103	5.00	173
11	7.00	39	5.45	147	7.00	103	5.00	124
12	7.00	103	5.45	160	7.00	94	5.00	124
13	7.00	202	5.45	188	7.00	131	5.00	124
14	7.00	173	5.45	202	7.00	103	5.00	90
15	7.00	173	5.45	150	7.00	39	5.00	168
16	7.00	188	5.45	202	7.00	46	5.00	99
17	7.00	252	5.45	150	7.00	147	5.00	124
18	7.00	39	5.45	147	7.00	351	5.00	408
19	7.00	202	5.45	173	7.00	188	5.00	160
20	7.00	142	5.45	173	7.00	173	5.00	196
21	7.00	94	5.45	202	7.00	165	5.00	147
22	7.00	188	5.45	202	7.00	147	5.00	173
23	7.00	506	5.45	524	7.00	196	5.00	234
24	7.00	567	5.30	440	7.00	173	5.00	182
25	7.00	536	5.30	424	7.00	173	5.00	124
26	7.00	365	5.30	202	7.00	218	5.00	269
27	7.00	365	5.30	202	7.00	173	5.00	147
28	7.00	351	5.30	234	7.00	234	5.00	288
29	7.00	238	5.30	202	7.00	342	5.00	450
30	7.00	202	5.30	90	7.00	398	5.00	252
31	7.00	39	5.00	28				

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	December.				March.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1909–10.								
1	7.00	234	5.00	238				
2	7.00	218	5.00	142	7.00	4,500	4.30	3,340
3	7.00	212	5.00	173	7.00	3,040	4.30	2,890
4	7.00	330	5.00	234	7.00	1,670	6.00	1,660
5	7.00	173	5.00	103	7.00	1,560	6.00	1,570
6	7.00	173	5.00	160	7.00	1,460	1.00	1,650
7	7.00	103	5.00	131	7.00	1,560	1.00	1,360
8	7.00	147	5.00	136	7.00	1,660	6.00	1,560
9	7.00	202	5.00	188	7.00	1,360	6.00	1,180
10	7.00	84	5.00	114	7.00	780	6.00	704
11					7.00	668	6.00	633
12					7.00	633	6.00	567
13					7.00	600	6.00	506
14					7.00	580	6.00	567
15					7.00	506	6.00	506
16					7.00	450	6.00	450
17					7.00	704	4.30	712
18					7.00	697	5.00	683
19					7.00	676	5.00	690
20					7.00	561	5.00	574
21					7.00	633	5.00	600
22					7.00	561	5.00	593
23					7.00	1,660	5.00	1,970
24					7.00	2,230	5.00	2,110
25					7.00	2,890	5.00	3,040
26					7.00	3,310	5.00	3,610
27					7.00	2,750	5.00	2,680
28					7.00	2,610	5.00	2,750
29					7.00	2,610	5.00	2,480
30					7.00	2,750	5.00	3,040
31					7.00	3,190	5.00	3,260
	April.				May.			
1910.								
1	7.00	3,340	5.00	3,460	7.00	613	6.00	613
2	7.00	2,890	5.00	2,480	7.00	647	6.00	742
3	7.00	2,750	5.00	2,610	7.00	757	6.00	683
4	7.00	2,050	5.00	1,880	7.00	683	6.00	613
5	7.00	1,770	5.00	1,820	7.00	683	6.00	757
6	7.00	2,480	5.00	2,540	7.00	549	6.00	489
7	7.00	2,570	5.00	2,350	7.00	757	6.00	683
8	7.00	1,660	5.00	1,560	7.00	489	6.00	434
9	7.00	1,360	5.00	1,270	7.00	434	6.00	408
10	7.00	940	5.00	820	7.00	549	6.00	580
11	7.00	780	5.00	788	7.00	549	6.00	489
12	7.00	780	5.00	780	7.00	461	6.00	434
13	7.00	704	5.00	668	7.00	434	6.00	384
14	7.00	633	5.00	640	7.00	258	6.00	296
15	7.00	506	5.00	450	7.00	338	6.00	360
16	7.00	424	5.00	450	7.00	434	6.00	384
17	7.00	506	6.00	536	7.00	360	6.00	408
18	7.00	450	6.00	478	7.00	757	6.00	796
19	7.00	1,410	6.00	1,430	7.00	757	6.00	683
20	7.00	1,180	6.00	1,100	7.00	613	6.00	489
21	7.00	780	6.00	820	7.00	518	6.00	549
22	7.00	860	6.00	820	7.00	683	6.00	613
23	7.00	780	6.00	780	7.00	549	6.00	518
24	7.00	567	6.00	506	7.00	489	6.00	549
25	7.00	450	6.00	633	7.00	613	6.00	757
26	7.00	3,440	6.00	3,830	7.00	1,160	6.00	1,850
27	7.00	3,000	6.00	2,850	7.00	1,630	6.00	1,430
28	7.00	1,960	6.00	1,850	7.00	757	6.00	683
29	7.00	1,080	6.00	1,000	7.00	580	6.00	580
30	7.00	757	6.00	683	7.00	518	6.00	549
31					7.00	1,080	6.00	1,120



A. DAM AND ELECTRIC-POWER STATION OF NEW ENGLAND POWER CO. ON DEERFIELD RIVER 3 MILES BELOW SHELBURNE FALLS, MASS., JUNE 4, 1913.



B. DAM OF GREENFIELD ELECTRIC LIGHT & POWER CO. ON DEERFIELD RIVER AT GARDNERS FALLS, BELOW SHELBURNE FALLS, MASS., NOVEMBER 27, 1911.

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	June.				July.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	7.00	1,200	6.00	1,080	7.00	118	6.00	129
2	7.00	1,100	6.00	916	7.00	224	6.00	97
3	7.00	836	6.00	757	7.00	88	6.00	97
4	7.00	549	6.00	489	7.00	193	6.00	36
5	7.00	518	6.00	489	7.00	48	6.00	46
6	7.00	489	6.00	461	7.00	129	6.00	97
7	7.00	434	6.00	489	7.00	118	6.00	97
8	7.00	518	6.00	549	7.00	97	6.00	97
9	7.00	757	6.00	916	7.00	88	6.00	97
10	7.00	1,430	6.00	1,530	7.00	55	6.00	118
11	7.00	1,480	6.00	1,430	7.00	118	6.00	88
12	7.00	1,080	6.00	1,010	7.00	36	6.00	42
13	7.00	916	6.00	916	7.00	46	6.00	55
14	7.00	958	6.00	916	7.00	79	6.00	62
15	7.00	916	6.00	757	7.00	97	6.00	97
16	7.00	647	6.00	683	7.00	25	6.00	36
17	7.00	719	6.00	836	7.00	48	6.00	62
18	7.00	1,160	6.00	1,160	7.00	30	6.00	152
19	7.00	757	6.00	613	7.00	150	6.00	97
20	7.00	549	6.00	434	7.00	27	6.00	48
21	7.00	384	6.00	384	7.00	62	6.00	62
22	7.00	338	6.00	296	7.00	97	6.00	48
23	7.00	224	6.00	224	7.00	62	6.00	66
24	7.00	241	6.00	224	7.00	62	6.00	62
25	7.00	224	6.00	228	7.00	55	6.00	48
26	7.00	224	6.00	224	7.00	97	6.00	107
27	7.00	224	6.00	224	7.00	152	6.00	140
28	7.00	193	6.00	165	7.00	118	6.00	118
29	7.00	152	6.00	118	7.00	118	6.00	118
30	7.00	97	6.00	97	7.00	97	6.00	88
31					7.00	70	6.00	208

	August.				September.			
1	7.00	62	6.00	97	7.00	21	6.00	97
2	7.00	107	6.00	97	7.00	25	6.00	36
3	7.00	107	6.00	97	7.00	42	6.00	36
4	7.00	118	6.00	124	7.00	42	6.00	36
5	7.00	129	6.00	97	7.00	42	6.00	48
6	7.00	79	6.00	70	7.00	461	6.00	489
7	7.00	79	6.00	79	7.00	580	6.00	580
8	7.00	36	6.00	107	7.00	384	6.00	317
9	7.00	88	6.00	88	7.00	224	6.00	118
10	7.00	62	6.00	70	7.00	118	6.00	118
11	7.00	79	6.00	224	7.00	97	6.00	88
12	7.00	118	6.00	193	7.00	79	6.00	224
13	7.00	241	6.00	224	7.00	152	6.00	118
14	7.00	152	6.00	140	7.00	118	6.00	107
15	7.00	88	6.00	79	7.00	97	6.00	25
16	7.00	62	6.00	88	7.00	79	6.00	25
17	7.00	107	6.00	48	7.00	28	6.00	19
18	7.00	25	6.00	48	7.00	39	6.00	34
19	7.00	97	6.00	97	7.00	52	6.00	60
20	7.00	118	6.00	79	7.00	84	6.00	67
21	7.00	79	6.00	62	7.00	34	6.00	28
22	7.00	62	6.00	60	7.00	94	6.00	94
23	7.00	48	6.00	42	7.00	84	6.00	84
24	7.00	42	6.00	42	7.00	84	6.00	67
25	7.00	36	6.00	42	7.00	28	6.00	19
26	7.00	42	6.00	36	7.00	84	6.00	94
27	7.00	36	6.00	30	7.00	84	6.00	94
28	7.00	25	6.00	25	7.00	94	6.00	103
29	7.00	25	6.00	25	7.00	103	6.00	124
30	7.00	30	6.00	36	7.00	147	6.00	218
31	7.00	36	6.00	25				

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	October.				November.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	7.00	103	5.30	84	7.00	103	5.00	124
2	7.00	67	5.30	67	7.00	124	5.00	124
3	7.00	52	5.30	34	7.00	136	5.00	136
4	7.00	28	5.30	28	7.00	450	5.00	780
5	7.00	28	5.30	28	7.00	820	5.00	780
6	7.00	84	5.30	103	7.00	704	5.00	668
7	7.00	84	5.30	67	7.00	424	5.00	398
8	7.00	67	5.30	76	7.00	252	5.00	398
9	7.00	76	5.30	76	7.00	308	5.00	234
10	7.00	39	5.30	39	7.00	160	5.00	124
11	7.00	39	5.30	34	7.00	234	5.00	234
12	7.00	103	5.30	84	7.00	202	5.00	202
13	7.00	103	5.30	103	7.00	188	5.00	188
14	7.00	84	5.30	67	7.00	234	5.00	252
15	7.00	84	5.30	67	7.00	234	5.00	136
16	7.00	76	5.30	52	7.00	234	5.00	234
17	7.00	39	6.00	103	7.00	202	5.00	147
18	7.00	94	6.00	67	7.00	136	5.00	136
19	7.00	28	6.00	19	7.00	147	5.00	136
20	7.00	39	6.00	39	7.00	147	5.00	147
21	7.00	39	6.00	39	7.00	136	5.00	124
22	7.00	84	5.00	94	7.00	124	5.00	124
23	7.00	94	5.00	124	7.00	124	5.00	124
24	7.00	202	5.00	124	7.00	136	5.00	124
25	7.00	114	5.00	103	7.00	124	5.00	114
26	7.00	136	5.00	103	7.00	103	5.00	103
27	7.00	114	5.00	103	7.00	147	5.00	160
28	7.00	114	5.00	188	7.00	173	5.00	188
29	7.00	351	5.00	308	7.00	234	5.00	202
30	7.00	202	5.00	160	7.00	173	5.00	188
31	7.00	52	5.00	351	7.00	.....	5.00	

Day.	December.				April.			
1910–11.								
1	7.00	114	5.00	114	7.50	719	5.40	620
2	7.00	124	5.00	103	7.30	440	5.30	495
3	7.00	124	5.00	103	7.25	398	5.40	555
4	7.00	124	5.00	94	7.20	300	5.45	450
5	7.00	124	5.00	84	7.50	317	5.20	440
6	7.00	103	5.00	84	7.35	765	5.25	2,860
7	7.00	103	5.00	76	7.30	4,460	5.45	5,250
8	7.00	124	5.00	103	7.35	3,160	5.50	3,160
9	7.00	136	5.00	103	7.40	2,210	5.35	1,970
10	7.00	124	5.00	103	7.20	1,440	5.15	1,340
11	7.00	103	5.00	84	7.20	1,000	6.55	1,250
12	7.00	94	5.00	94	7.50	924	5.30	1,080
13	7.00	124	5.00	124	7.15	1,080	5.35	1,540
14	7.00	147	5.00	147	7.35	1,750	5.25	2,330
15	7.00	124	5.00	103	7.20	4,460	5.50	3,770
16	7.00	103	5.00	94	7.30	4,100	5.30	2,330
17	7.00	94	5.00	114	7.45	2,090	5.45	1,750
18	7.00	94	5.00	124	7.30	1,440	5.25	1,340
19	7.00	124	5.00	124	7.50	1,340	5.50	1,440
20	7.00	124	5.00	124	7.45	1,250	5.20	1,440
21	.....	.....	.....	.....	7.30	1,160	5.45	1,540
22	.....	.....	.....	.....	7.15	1,640	5.55	1,340
23	.....	.....	.....	.....	7.35	1,440	5.35	1,250
24	.....	.....	.....	.....	7.50	1,160	6.00	1,440
25	.....	.....	.....	.....	7.20	2,110	5.30	2,250
26	.....	.....	.....	.....	7.20	2,860	5.25	2,610
27	.....	.....	.....	.....	7.15	3,160	5.15	3,040
28	.....	.....	.....	.....	7.25	3,720	6.10	4,310
29	.....	.....	.....	.....	7.35	3,770	6.30	4,130
30	.....	.....	.....	.....	7.45	3,340	5.20	2,780

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	May.				June.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	7.30	3,040	5.45	2,720	7.40	147	5.45	342
2	7.35	6,150	5.45	4,460	7.35	408	5.40	342
3	7.50	2,860	5.45	2,330	7.45	196	5.45	218
4	7.15	1,860	5.45	1,540	7.30	262	5.35	152
5	7.10	1,440	5.50	1,340	7.30	99	5.40	208
6	7.50	1,250	5.50	1,040	7.35	129	5.30	142
7	7.50	765	6.00	495	7.30	317	5.30	1,440
8	7.50	765	5.50	262	7.30	1,200	5.25	920
9	7.45	567	5.45	620	7.35	555	5.30	518
10	7.40	506	5.40	450	7.30	495	5.40	461
11	7.45	317	5.35	374	7.45	389	5.30	342
12	7.30	389	5.55	351	7.40	567	5.30	690
13	7.25	450	5.25	440	7.35	3,010	5.35	2,210
14	7.35	351	5.45	342	7.35	1,750	5.35	1,340
15	7.40	317	5.45	300	7.40	1,080	5.35	1,000
16	7.45	360	5.50	262	7.35	1,000	5.40	690
17	7.35	269	5.30	228	7.20	620	5.30	567
18	7.40	234	5.30	147	7.40	440	5.30	408
19	7.35	300	5.45	440	7.30	351	5.40	308
20	7.30	351	5.40	360	7.30	360	5.30	330
21	7.40	360	5.30	300	7.35	308	5.30	269
22	7.35	374	5.40	317	7.30	202	5.30	288
23	7.35	300	5.35	228	7.30	173	5.30	234
24	7.40	234	5.30	262	7.35	103	5.40	188
25	7.45	208	5.50	277	7.40	67	5.30	103
26	7.30	228	5.30	317	7.30	196	5.30	234
27	7.45	262	5.35	228	7.30	208	5.30	398
28	7.40	179	5.40	173	7.35	218	5.30	269
29	7.35	168	5.30	103	7.30	202	5.25	173
30	7.40	99	5.35	103	7.30	228	5.30	103
31	7.35	103	5.40	228				
	July.				August.			
1	7.30	103	5.30	107	7.30	76	5.35	76
2	7.40	147	5.45	39	7.30	94	5.30	70
3	7.35	67	4.00	147	7.35	76	5.35	67
4	7.40	173	5.40	52	7.35	94	5.30	76
5	7.30	28	5.30	103	7.30	60	5.30	46
6	7.30	88	5.30	107	7.30	24	5.30	34
7	7.35	28	5.35	99	7.30	60	5.30	76
8	7.30	34	5.30	84	7.30	64	5.30	60
9	7.40	28	5.35	67	7.30	136	5.30	84
10	7.30	28	5.40	94	7.30	70	5.40	76
11	7.35	114	5.35	67	7.30	60	5.30	46
12	7.30	28	5.40	103	7.30	81	5.30	81
13	7.35	67	5.35	19	7.30	60	5.30	94
14	7.35	39	5.30	136	7.30	24	5.30	76
15	7.30	30	5.30	107	7.30	34	5.30	24
16	7.40	28	5.30	52	7.30	288	5.30	218
17	7.40	30	5.30	28	7.30	160	5.30	84
18	7.30	103	5.30	52	7.30	94	5.30	94
19	7.30	88	5.30	30	7.30	84	5.30	288
20	7.30	84	5.35	84	7.45	142	5.30	88
21	7.30	28	5.40	52	7.30	39	5.30	179
22	7.30	94	5.35	52	7.30	107	5.30	81
23	7.40	28	5.30	28	7.30	24	5.30	81
24	7.30	39	5.30	103	7.30	76	5.30	24
25	7.30	103	5.30	506	7.30	94	5.30	103
26	7.35	269	5.30	351	7.45	67	5.30	202
27	7.30	103	5.30	103	7.30	188	5.30	94
28	7.30	88	5.30	103	7.30	94	5.30	188
29	7.35	107	5.30	351	7.30	2,820	5.30	1,610
30	7.40	55	5.30	269	7.30	844	5.30	536
31	7.30	173	5.30	234	7.30	424	5.30	389

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	September.				October.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	7.30	277	5.30	351	7.30	704	5.40	647
2	7.30	208	5.30	160	7.30	1,720	5.30	1,510
3	7.40	234	5.30	506	7.30	1,140	5.30	980
4	7.30	398	5.30	330	7.30	668	5.30	2,820
5	7.30	218	5.30	288	7.30	2,110	4.00	1,580
6	7.30	234	5.30	980	8.00	1,040	4.00	940
7	7.30	940	5.30	668	8.00	860	4.00	876
8	7.30	536	5.30	1,140	7.00	1,060	3.30	1,000
9	7.30	900	5.30	4,040	8.00	1,020	4.00	956
10	7.30	2,290	5.30	1,460	8.00	924	4.00	820
11	7.30	1,020	5.30	704	8.00	647	4.00	620
12	7.30	478	5.30	424	8.00	495	4.00	506
13	7.30	398	5.30	330	8.00	398	4.00	424
14	7.30	252	5.30	277	8.00	342	4.00	317
15	7.30	136	5.30	424	7.00	351	2.30	360
16	7.30	820	5.30	742	8.00	277	4.00	330
17	7.30	600	5.30	424	8.00	269	4.00	277
18	7.30	351	5.30	288	8.00	342	4.00	3,340
19	7.30	252	5.30	308	8.00	7,650	4.00	6,040
20	7.30	277	5.30	188	8.00	3,640	4.00	2,860
21	7.30	288	5.30	160	8.00	1,990	4.00	2,050
22	7.30	308	5.30	478	7.00	3,460	3.00	2,860
23	7.30	506	5.30	424	8.00	3,310	4.00	3,040
24	7.45	269	5.30	478	8.00	1,990	4.00	1,770
25	7.30	450	5.30	374	8.00	1,320	4.00	1,120
26	7.30	351	5.30	288	8.00	940	4.00	924
27	7.30	288	5.30	262	8.00	719	4.00	704
28	7.30	398	5.30	408	8.00	600	4.00	580
29	7.30	351	5.30	506	7.00	536	3.00	506
30	7.30	1,410	5.30	1,060	8.00	450	4.00	440
31					8.00	440	4.00	536
	November.				December.			
1	8.00	1,060	4.00	940	8.00	980	4.00	780
2	8.00	780	4.00	690	8.00	704	4.00	742
3	8.00	506	4.00	518	7.00	518	3.00	450
4	8.00	580	4.00	506	8.00	360	4.00	351
5	7.00	342	3.00	398	8.00	317	4.00	300
6	8.00	389	4.00	450	8.00	374	4.00	288
7	8.00	940	4.00	980	8.00	374	4.00	342
8	8.00	1,220	4.00	1,120	8.00	424	4.00	389
9	8.00	860	4.00	780	8.00	288	4.00	374
10	8.00	690	4.00	765	7.00	398	3.00	424
11	8.00	820	4.00	844	8.00	408	4.00	342
12	7.00	742	3.00	567	8.00	633	4.00	742
13	8.00	1,540	4.00	1,120	8.00	844	4.00	876
14	8.00	860	4.00	820	8.00	780	4.00	742
15	8.00	765	4.00	742	8.00	668	4.00	690
16	8.00	555	4.00	633	8.00	668	4.00	765
17	8.00	495	4.00	440	7.30	1,270	3.00	1,460
18	8.00	668	4.00	1,940	8.00	1,080	4.00	940
19	7.00	1,880	3.00	1,560	8.00	536	4.00	567
20	8.00	1,180	4.00	1,140	8.00	398	4.00	351
21	8.00	956	4.00	704	8.00	317	4.00	389
22	8.00	647	4.00	580	8.00	450	4.00	478
23	8.00	450	4.00	478	8.00	1,880	4.00	4,990
24	8.00	620	4.00	647	7.00	2,420	12.20	2,230
25	8.00	600	4.00	567	7.00	1,660	1.10	1,560
26	7.00	450	3.00	408	7.00	1,270	12.45	1,180
27	8.00	360	4.00	389	7.00	1,660	1.10	1,270
28	8.00	440	4.00	408	7.00	1,180	1.10	1,100
29	8.00	2,820	4.00	2,230	8.00	360	4.00	351
30	8.00	1,380	4.00	1,250	8.00	424	4.00	461
31					7.00	450	3.00	374

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	January.				February.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	8.00	424	4.00	440				
2	8.00	351	4.00	360				
3	8.00	374	4.00	360				
4	8.00	317	4.00	308				
5	8.00	277	4.00	342				
6								
7								
8	10.00	144						
9								
10								
11								
12								
13								
14			2.00	160				
15							3.00	254
16							3.00	240
17							3.00	207
18	10.00	207	5.00	160			3.00	180
19			2.00	228			3.00	197
20	8.00	372	12.00	690			3.00	166
21	8.00	513					3.00	160
22							3.00	267
23							3.00	282
24							3.00	352
25	10.00	298					3.00	316
26							3.00	298
27	10.00	267					3.00	316
28							3.00	298
29							3.00	316
30								
31								
	March.				April.			
1			3.00	267	7.00	3,800	5.00	3,490
2			3.00	282	7.00	2,610	5.00	2,890
3			3.00	273	7.00	2,230	5.00	1,770
4			3.00	282	7.00	1,180	5.00	860
5			3.00	217	7.00	1,020	5.00	1,360
6			3.00	156	7.00	3,490	5.00	5,290
7			3.00	120	7.00	4,690	6.00	8,010
8	8.00	135	3.00	129	7.00	6,370	5.00	2,640
9	8.00	144	3.00	137	7.00	4,310	5.00	2,640
10	8.00	173	3.00	240	7.00	1,880	5.30	1,720
11	8.00	135	3.00	201	7.00	1,440	5.30	1,460
12	8.00	154	3.00	129	7.30	1,320	5.00	1,100
13	8.00	298	3.00	333	7.00	1,360	5.30	1,460
14	8.00	757	3.00	627	7.00	1,560	5.00	2,110
15	8.00	568	3.00	903	7.00	1,970	5.00	2,230
16	8.00	3,960	3.00	2,750	7.00	3,800	5.00	6,040
17	8.00	1,970	3.00	1,770	7.00	5,090	5.00	4,500
18	8.00	1,660	3.00	1,940	7.00	3,340	6.00	3,340
19	8.00	1,880	3.00	1,990	7.00	3,260	5.00	2,820
20	8.00	2,350	3.00	2,890	7.00	2,110	6.00	1,990
21	8.00	1,770	3.00	1,460	7.00	1,660	6.00	1,560
22	8.00	1,140	3.00	980	7.00	2,010	5.00	2,230
23	8.00	742	3.00	600	7.00	3,340	6.00	3,040
24	7.00	495	3.00	633	7.00	2,480	6.00	2,450
25	8.00	518	3.00	424	7.00	1,180	3.00	1,360
26	8.00	317	5.00	506	7.00	1,460	5.00	1,270
27	7.00	450	5.00	398	7.00	1,460	5.00	1,250
28	7.00	374	5.00	536	7.00	1,320	6.00	1,270
29	7.00	620	5.00	1,880	7.00	1,180	5.00	1,100
30	7.00	2,350	5.00	2,050	7.00	1,020	5.00	980
31	7.00	1,720	5.30	1,990				

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	May.				June.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	7.00	900	5.00	1,020	7.00	2,450	5.00	1,360
2	7.00	860	5.00	780	7.00	1,100	5.00	900
3	7.00	633	5.00	580	7.00	6,150	5.00	2,890
4	7.00	506	5.00	351	7.00	1,770	6.00	1,410
5	7.00	269	5.00	506	7.00	1,480	6.00	1,270
6	7.00	956	5.00	1,460	7.00	1,020	5.00	1,560
7	7.00	1,270	5.00	1,120	7.00	1,460	5.00	1,410
8	7.00	940	6.00	780	7.00	1,100	5.00	1,020
9	7.00	780	6.00	1,020	7.00	450	6.00	633
10	7.00	668	6.00	780	7.00	506	6.00	495
11	7.00	633	6.00	600	7.00	567	5.00	424
12	7.00	450	5.00	506	7.00	360	5.00	321
13	7.00	567	6.00	780	7.00	218	5.00	300
14	7.00	1,100	6.00	860	7.00	234	5.00	188
15	7.00	704	5.00	690	7.00	142	5.00	160
16	7.00	567	6.00	567	7.00	202	5.00	160
17	7.00	4,130	6.00	3,800	7.00	179	5.00	330
18	7.00	2,050	6.00	1,510	7.00	173	5.00	173
19	7.00	1,140	6.00	980	7.00	168	5.00	173
20	7.00	860	6.00	820	7.00	84	5.00	129
21	7.00	1,020	7.00	980	7.00	103	5.00	84
22	7.00	1,560	6.30	1,270	7.00	76	5.00	103
23	7.00	1,180	7.00	940	7.00	28	5.00	136
24	7.00	860	6.30	1,020	7.00	64	5.00	103
25	7.00	940	5.00	780	7.00	67	5.00	84
26	7.00	633	6.30	567	7.00	67	5.00	72
27	7.00	536	5.00	495	7.00	64	5.00	94
28	7.00	398	6.00	506	7.00	70	5.00	52
29	7.00	351	6.00	450	7.00	46	5.00	64
30	7.00	4,130	6.00	4,130	7.00	28	5.00	30
31	7.00	2,890	6.00	2,610				

	July.				August.			
1	7.00	60	5.00	99	7.00	67	5.00	60
2	7.00	55	5.00	81	7.00	49	5.00	19
3	7.00	39	5.00	84	7.00	19	5.00	11
4	7.00	76	5.00	8	7.00	28	5.00	12
5	7.00	19	5.00	12	7.00	147	5.00	39
6	7.00	12	5.00	7	7.00	107	5.00	103
7	7.00	6	5.00	173	7.00	67	5.00	52
8	7.00	168	5.00	114	7.00	12	5.00	28
9	7.00	94	5.00	84	7.00	19	5.00	34
10	7.00	76	5.00	67	7.00	12	5.00	34
11	7.00	67	5.00	84	7.00	46	5.30	633
12	7.00	84	5.00	52	7.00	351	5.00	330
13	7.00	64	5.00	103	7.00	202	5.00	160
14	7.00	84	5.00	39	7.00	142	5.00	114
15	7.00	147	5.00	202	7.00	64	5.00	84
16	7.00	173	5.00	124	7.00	76	5.00	28
17	7.00	84	5.00	76	7.00	12	5.00	28
18	7.00	52	5.00	147	7.00	52	5.00	28
19	7.00	424	5.00	234	7.00	269	5.00	234
20	7.00	202	5.00	168	7.00	308	5.00	269
21	7.00	124	5.00	52	7.00	188	5.00	168
22	7.00	147	5.00	269	7.00	90	5.00	103
23	7.00	124	5.00	94	7.00	67	5.00	269
24	7.00	99	5.00	103	7.00	450	5.00	374
25	7.00	76	5.00	64	7.00	234	5.00	252
26	7.00	81	5.00	94	7.00	450	5.00	440
27	7.00	67	5.00	81	7.00	478	5.00	202
28	7.00	39	5.00	19	7.00	173	6.00	202
29	7.00	12	5.00	12	7.00	202	6.00	234
30	7.00	7	5.00	28	7.00	228	5.00	160
31	7.00	67	5.00	84	7.00	19	5.00	76

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	September.				October.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	7.00	64	5.00	39	7.00	308	5.00	269
2	7.00	81	5.00	114	7.00	234	5.00	308
3	7.00	99	5.00	99	7.00	269	5.00	234
4	7.00	440	5.00	269	7.00	218	5.00	234
5	7.00	228	5.00	188	7.00	179	5.00	173
6	7.00	188	5.00	228	7.00	147	5.00	168
7	7.00	202	5.00	188	7.00	136	5.00	94
8	7.00	103	5.00	94	7.00	124	5.00	99
9	7.00	124	5.00	99	7.00	84	5.00	136
10	7.00	114	5.00	94	7.00	76	5.00	103
11	7.00	67	5.00	81	7.00	160	5.00	450
12	7.00	28	5.00	76	7.00	567	5.00	536
13	7.00	52	5.00	28	7.00	398	5.00	450
14	7.00	49	5.00	60	7.00	360	5.00	308
15	7.00	28	5.00	12	7.00	317	5.00	234
16	7.00	173	5.00	1,140	7.00	188	5.00	142
17	7.00	506	5.00	424	7.00	160	5.00	147
18	7.00	269	5.00	188	7.00	173	5.00	179
19	7.00	173	5.00	168	7.00	188	5.00	450
20	7.00	103	5.00	136	7.00	269	5.00	234
21	7.00	202	5.00	269	7.00	288	5.00	269
22	7.00	252	5.00	234	7.00	269	5.00	188
23	7.00	202	5.00	188	7.00	103	5.00	5,500
24	7.00	179	5.00	168	6.30	17,200	5.00	8,250
25	7.00	136	5.00	103	7.00	4,690	5.00	3,640
26	7.00	76	5.00	99	7.00	3,260	5.00	2,290
27	7.00	67	5.00	39	7.00	3,190	5.00	2,230
28	7.00	103	5.00	76	7.00	1,100	5.00	940
29	7.00	39	5.00	49	7.00	780	5.00	704
30	7.00	269	5.00	234	7.00	633	5.00	234
31					7.00	103	5.00	351

Day.	November.				December.			
1	7.00	506	5.00	704	7.00	269	4.30	308
2	7.00	1,180	5.00	780	7.00	351	4.30	600
3	7.00	567	5.00	450	7.00	4,170	4.30	2,230
4	7.00	398	5.00	374	7.00	1,770	4.30	1,220
5	7.00	398	5.00	374	7.00	1,020	4.30	860
6	7.00	351	5.00	398	7.00	1,180	4.30	1,140
7	7.00	450	5.00	506	7.00	1,200	4.30	1,100
8	7.00	3,800	5.00	2,170	7.30	1,180	4.30	980
9	7.00	1,560	5.00	1,270	7.30	860	4.30	704
10	7.00	1,060	5.00	780	7.30	633	4.30	506
11	7.00	704	5.00	633	7.30	478	4.30	580
12	7.00	506	5.00	450	7.30	424	4.30	450
13	7.00	461	5.00	780	7.30	374	4.30	351
14	7.00	1,770	5.00	1,360	7.30	351	4.30	398
15	7.00	780	5.00	567	8.00	308	4.30	269
16	7.00	495	5.00	780	8.00	398	4.30	374
17	7.00	704	5.00	633	8.00	351	4.30	269
18	7.00	600	5.00	555	8.00	202	4.30	188
19	7.00	424	5.00	450	8.00	234	4.30	1,180
20	7.00	424	5.00	440	8.00	860	4.30	780
21	7.00	398	5.00	450	8.00	668	4.30	506
22	7.00	440	5.00	424	8.00	398	4.30	374
23	7.00	424	5.00	360	8.00	424	4.30	351
24	7.00	308	5.00	351	8.00	351	4.30	330
25	7.00	408	4.30	351	8.00	308	4.30	300
26	7.00	330	4.30	308	8.00	308	4.30	317
27	7.00	308	4.30	269	8.00	269	4.30	351
28	7.00	288	4.30	269	8.00	288	4.30	308
29	7.00	269	4.30	288	8.00	351	4.30	300
30	7.00	252	4.30	234	8.00	374	4.30	780
31					8.00	1,990	4.30	1,460

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913— Continued.

Day.	January.				February.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1913.								
1	8.00	1,270	4.30	1,180	8.00	1,770	4.30	1,560
2	8.00	1,020	4.30	980	8.00	1,140	4.30	820
3	8.00	780	4.30	940	8.00	1,020	4.30	980
4	8.00	1,020	4.30	980	8.00	1,460	4.30	1,180
5	8.00	1,180	4.30	1,100	8.00	1,320	4.30	1,120
6	8.00	1,100	4.30	1,020	8.00	1,180	4.30	1,100
7	8.00	1,180	4.30	2,750	8.00	1,180	4.30	780
8	8.00	2,230	4.30	2,050	8.00	1,140	4.30	1,180
9	8.00	1,770	4.30	1,320	8.00	1,020	4.30	620
10	8.00	1,180	4.30	1,060	8.00	374	4.30	450
11	8.00	1,020	4.30	1,100	8.00	330	4.30	308
12	8.00	1,660	4.30	1,480	8.00	351	4.30	351
13	8.00	1,410	4.30	1,360	8.00	241	4.30	234
14	8.00	1,060	4.30	940	8.00	.....	4.30	.....
15	8.00	924	4.30	980	8.00	.....	4.30	.....
16	8.00	780	4.30	900	8.00	.....	4.30	.....
17	8.00	1,510	4.30	2,750	8.00	.....	4.30	.....
18	8.00	4,040	4.30	3,560	8.00	.....	4.30	.....
19	8.00	3,190	4.30	2,820	8.00	.....	4.30	.....
20	8.00	1,940	4.30	1,820	8.00	.....	4.30	.....
21	8.00	2,890	4.30	2,230	8.00	.....	4.30	.....
22	8.00	1,770	4.30	1,660	8.00	.....	4.30	.....
23	8.00	1,180	4.30	1,660	8.00	.....	4.30	.....
24	8.00	1,770	4.30	1,320	8.00	.....	4.30	.....
25	8.00	1,020	4.30	1,000	8.00	.....	4.30	.....
26	8.00	940	4.40	820	7.30	.....	4.30	.....
27	8.00	860	4.30	780	7.30	.....	4.30	.....
28	8.00	668	4.30	506	7.30	.....	4.30	.....
29	8.00	398	4.30	330	.....	.....	.....	.....
30	8.00	324	4.30	360	.....	.....	.....	.....
31	8.00	398	4.30	308	.....	.....	.....	.....

	March.				April.			
1	.....	.....	.....	.....	7.00	1,180	5.00	1,100
2	.....	.....	.....	.....	7.00	1,020	5.00	1,140
3	.....	.....	.....	.....	7.00	1,100	5.00	900
4	.....	.....	.....	.....	7.00	860	5.00	900
5	.....	.....	.....	.....	7.00	980	5.00	1,410
6	.....	.....	.....	.....	7.00	1,060	5.00	980
7	.....	.....	.....	.....	7.00	900	5.00	780
8	.....	.....	.....	.....	7.00	600	5.00	567
9	.....	.....	4.30	1,540	7.00	567	5.00	351
10	8.00	1,270	5.00	1,140	7.00	269	5.00	308
11	8.00	742	4.30	633	7.00	450	5.00	1,990
12	8.00	506	4.30	780	7.00	3,040	5.00	2,680
13	7.30	742	5.00	567	7.00	1,060	5.00	980
14	7.30	668	5.00	6,150	7.00	2,050	5.00	1,410
15	7.00	4,400	5.00	3,040	7.00	860	5.00	1,270
16	7.00	3,880	5.00	2,350	7.00	1,140	5.00	980
17	7.00	1,360	5.00	1,180	7.00	1,020	5.00	780
18	7.00	1,460	5.00	940	7.00	704	5.00	668
19	7.00	780	5.00	860	7.00	567	5.00	536
20	7.00	780	5.00	4,130	7.00	600	5.00	536
21	7.00	2,750	5.00	4,130	7.00	555	5.00	536
22	7.00	2,960	5.00	2,750	7.00	478	5.00	450
23	7.00	2,680	5.00	1,660	7.00	461	5.00	440
24	7.00	1,360	5.00	4,400	7.00	478	5.00	450
25	7.00	3,040	5.00	2,750	7.00	398	5.00	424
6	7.00	4,690	5.00	9,660	7.00	424	5.00	374
7	7.00	6,830	6.00	16,600	7.00	450	5.00	506
8	7.00	6,830	5.00	4,690	7.00	450	5.00	424
.....	7.00	2,480	5.00	2,350	7.00	1,660	5.00	1,610
.....	7.00	1,360	5.00	1,100	7.00	1,020	5.00	820
.....	7.00	1,360	5.00	1,270	.....	.....	.....	.....

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913—Continued.

Day.	May.				June.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1913.								
1	7.00	536	5.00	450	7.00	1,020	5.00	1,020
2	7.00	398	5.00	360	7.00	860	5.00	780
3	7.00	450	5.00	440	7.00	860	5.00	704
4	7.00	374	5.00	398	7.00	450	5.00	398
5	7.00	330	5.30	374	7.00	351	5.00	269
6	7.00	308	5.00	277	7.00	288	5.00	202
7	7.00	288	5.00	269	7.00	94	5.00	84
8	7.00	351	5.00	342	7.00	351	5.00	330
9	7.00	330	5.00	173	7.00	269	5.00	424
10	7.00	288	5.00	147	7.00	234	5.00	147
11	7.00	308	5.00	374	7.00	234	5.00	114
12	7.00	567	5.00	351	7.00	173	5.00	160
13	7.00	704	5.00	234	7.00	124	5.00	124
14	7.00	202	5.00	330	7.00	103	5.00	99
15	7.00	202	5.00	234	7.00	84	5.00	76
16	7.00	351	5.00	600	7.00	84	5.00	67
17	7.00	308	5.00	374	7.00	103	5.00	124
18	7.00	269	5.00	234	7.00	103	5.00	67
19	7.00	234	5.00	269	7.00	39	5.00	114
20	7.00	351	5.00	254	7.00	28	5.00	103
21	7.00	269	5.00	506	7.00	234	5.00	252
22	7.00	506	5.00	398	7.00	218	5.00	173
23	7.00	780	5.00	1,660	7.00	124	5.00	202
24	7.00	2,480	5.00	1,990	7.00	124	5.00	124
25	7.00	1,360	5.00	1,270	7.00	114	5.00	103
26	7.00	1,320	5.00	1,100	7.00	46	5.00	76
27	7.00	536	5.00	567	7.00	84	5.00	76
28	7.00	580	5.00	860	7.00	202	5.00	52
29	7.00	3,340	5.00	1,880	7.00	60	5.00	136
30	7.00	1,660	5.00	1,410	7.00	84	5.00	136
31	7.00	1,180	5.00	1,140	.....	.....	.....	.....

Day.	July.				August.			
1	7.00	136	5.00	60	7.00	398	5.00	424
2	7.00	124	5.00	28	7.00	389	5.00	398
3	7.00	60	5.00	39	7.00	308	5.00	506
4	7.00	46	5.00	28	7.00	424	5.00	398
5	7.00	34	5.00	28	7.00	234	5.00	567
6	7.00	52	5.00	46	7.00	536	5.00	633
7	7.00	39	5.00	28	7.00	567	5.00	567
8	7.00	269	5.00	103	7.00	308	5.00	269
9	7.00	136	5.00	103	7.00	188	5.00	234
10	7.00	103	5.00	124	7.00	567	5.00	567
11	7.00	103	5.00	76	7.00	668	5.00	704
12	7.00	173	5.00	234	7.00	668	5.00	780
13	7.00	52	5.00	234	7.00	742	5.00	567
14	7.00	234	5.00	398	7.00	351	5.00	374
15	7.00	506	5.00	398	7.00	567	5.00	374
16	7.00	234	5.00	39	7.00	234	5.00	76
17	7.00	52	5.00	84	7.00	67	5.00	64
18	7.00	52	5.00	67	7.00	76	5.00	398
19	7.00	94	5.00	67	7.00	136	5.00	76
20	7.00	52	5.00	52	7.00	351	5.00	269
21	7.00	398	5.00	234	7.00	269	5.00	67
22	7.00	633	5.00	536	7.00	67	5.00	39
23	7.00	308	5.00	114	7.00	67	5.00	39
24	7.00	173	5.00	173	7.00	52	5.00	28
25	7.00	160	5.00	173	7.00	67	5.00	60
26	7.00	269	5.00	234	7.00	67	5.00	147
27	7.00	152	5.00	160	7.00	114	5.00	34
28	7.00	234	5.00	288	7.00	28	5.00	52
29	7.00	398	5.00	269	7.00	60	5.00	67
30	7.00	633	5.00	450	7.00	34	5.00	28
31	7.00	398	5.00	424	7.00	28	5.00	52

Discharge, in second-feet, of Deerfield River at Hoosac Tunnel, Mass., for 1909–1913— Continued.

Day.	September.				October.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1913.								
1	7.00	52	5.00	46	7.00	288	5.00	202
2	7.00	88	5.00	136	7.00	234	5.00	147
3	7.00	124	5.00	67	7.00	218	5.00	308
4	7.00	34	5.00	39	7.00	160	5.00	173
5	7.00	28	5.00	39	7.00	147	5.00	120
6	7.00	124	5.00	67	7.00	94	5.00	103
7	7.00	76	5.00	34	7.00	103	5.00	60
8	7.00	64	5.00	114	7.00	76	5.00	103
9	7.00	67	5.00	67	7.00	49	5.00	103
10	7.00	94	5.00	136	7.00	114	5.00	124
11	7.00	94	5.00	103	7.00	124	5.00	103
12	7.00	52	5.00	39	7.00	67	5.00	76
13	7.00	34	5.00	28	7.00	300	5.00	269
14	7.00	28	5.00	34	7.00	234	5.00	136
15	7.00	46	5.00	39	7.00	114	5.00	103
16	7.00	34	5.00	28	7.00	120	5.00	103
17	7.00	39	5.00	67	7.00	142	5.00	114
18	7.00	39	5.00	34	7.00	94	5.00	84
19	7.00	147	5.00	114	7.00	67	5.00	67
20	7.00	67	5.00	39	7.00	173	5.00	1,460
21	7.00	28	5.00	234	7.00	1,270	5.00	860
22	7.00	288	5.00	1,770	7.00	450	5.00	450
23	7.00	1,360	5.00	780	7.00	269	5.00	234
24	7.00	780	5.00	308	7.00	103	5.00	147
25	7.00	288	5.00	160	7.00	147	5.00	202
26	7.00	234	5.00	147	7.00	1,660	5.00	3,340
27	7.00	114	5.00	124	7.00	2,750	5.00	1,180
28	7.00	99	5.00	67	7.00	940	5.00	780
29	7.00	60	5.00	52	7.00	742	5.00	940
30	7.00	46	5.00	49	7.00	1,180	5.00	780
31					7.00	351	5.00	330

	November.				December.			
1	7.00	308	5.00	308				
2	7.00	160	5.00	124				
3	7.00	124	5.00	196				
4	7.00	330	5.00	308				
5	7.00	351	5.00	398				
6	7.00	351	5.00	308				
7	7.00	288	5.00	202				
8	7.00	218	5.00	202				
9	7.00	780	4.00	5,930				
10	7.00	5,930	5.00	3,340				
11	7.00	1,770	5.00	1,360				
12	7.00	940	5.00	860				
13	7.00	704	5.00	450				
14	7.00	555	5.00	780				
15	7.00	668	5.00	440				
16	7.00	478	5.00	398				
17	7.00	398	5.00	308				
18	7.00	424	5.00	398				
19	7.00	351	5.00	308				
20	7.00	780	5.00	704				
21	7.00	1,020	5.00	780				
22	7.00	633	5.00	633				
23	7.00	567	5.00	536				
24	7.00	450	4.30	398				
25	7.00	330	4.30	440				
26	7.00	330	4.30	351				
27	7.00	288	4.30	234				
28	7.00	269	4.30	234				
29	7.00	269	4.30	288				
30	7.30	308	4.30	288				
31								

NOTE.—Relation of gage height to discharge affected by ice during January, February, and March, 1911, and Jan. 6 to about Mar. 13, 1912. Discharge determined from a fairly well-defined rating curve.

Discharge determined from a fairly well defined rating curve; mean daily discharge not computed because of the unknown range of diurnal fluctuation. Figures for 1909 and 1910 are somewhat uncertain on account of apparent unreliability of observer.

DEERFIELD RIVER AT CHARLEMONT, MASS.

LOCATION.—One mile below the village of Charlemont.

DRAINAGE AREA.—362 square miles.

RECORDS AVAILABLE.—June 19, 1913, to September 30, 1915.

GAGES.—Water-stage recorder on left bank, referred to gage datum by a hook gage inside the well; outside sloping staff gage used for auxiliary readings. (See Pl. V.)

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Channel of coarse gravel and bowlders; fairly uniform section; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded 1913–1915: 15.7 feet, July 8, 1915; approximate discharge, 45,000 second-feet. Minimum stage recorded: 1.35 feet, September 21 and November 3, 1914; discharge, 23 second-feet.

WINTER FLOW.—Discharge relation affected by ice during winter months.

REGULATION.—Flow during summer months largely regulated by a storage reservoir at Somerset, Vt. Several power plants above station cause diurnal fluctuation.

ACCURACY.—Rating curve well defined as shown by figure 6. Records highly accurate.

Discharge measurements of Deerfield River at Charlemont, Mass., during 1913–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
June 20	R. S. Barnes	1.98	188	June 9	R. S. Barnes	2.01	211
23	....do	1.84	138	Nov. 3	C. H. Pierce	1.36	24.8
26	....do	1.74	105	25	R. S. Barnes	[a] 2.08	129
26	....do	1.60	77	Dec. 23	....do	[a] 2.28	92
Aug. 13	C. H. Pierce	2.37	414	1915.			
14	....do	2.29	363	Jan. 14	C. H. Pierce	[a] 2.38	380
Oct. 28	C. S. De Golyer	3.58	1,480	18	R. S. Barnes	[a] 2.19	288
28	....do	3.39	1,230	Feb. 14	....do	[a] 4.44	627
29	....do	2.98	827	23	....do	[a] 2.64	549
1914.							
Jan. 7	R. S. Barnes	[a] 3.01	229	May 28	C. H. Pierce	2.00	240
14	W. S. Easterly	[a] 3.01	207	June 19	....do	1.97	217
19	R. S. Barnes	[a] 3.15	246	July 17	Hardin Thweatt	2.14	285
30	....do	[a] 4.04	709	Aug. 17	....do	2.12	258
Feb. 17	....do	[a] 4.09	398	24	....do	3.38	1,230
Mar. 6	....do	[a] 4.92	1,000	24	....do	3.23	1,120
28	C. H. Pierce	7.61	9,950	24	....do	3.11	1,010
29	....do	5.31	4,250	Oct. 1	....do	2.62	589
29	....do	5.08	3,660				

[a] Discharge relation affected by ice.

Daily discharge, in second feet of Deerfield River at Charlemont, Mass., for the years ending Sept. 30, 1913–1915.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1913.					1913.				
1		106	310	49	16		255	115	47
2		81	255	76	17		57	53	55
3		47	147	97	18		72	135	51
4		76	106	49	19	72	74	288	100
5		51	235	79	20	192	70	147	79
6		53	448	112	21	255	235	94	59
7		55	584	124	22	245	215	49	700
8		299	409	59	23	153	188	62	1,530
9		90	188	97	24	128	188	76	521
10		154	305	45	25	132	225	38	260
11		154	685	87	26	90	215	47	175
12		109	612	66	27	106	166	97	128
13		204	468	43	28	132	205	43	87
14		299	346	43	29	81	422	68	85
15		328	210	38	30	100	364	103	76
					31		352	51	

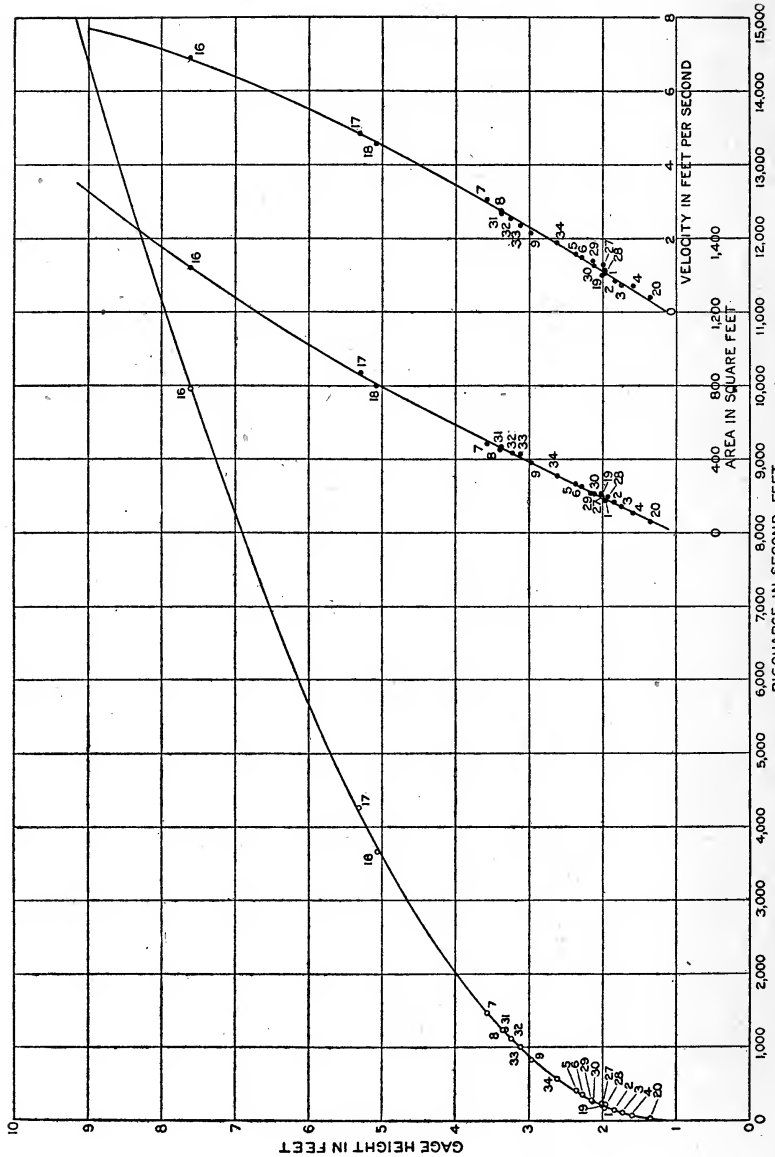


FIGURE 6.—Rating curve for Deerfield River at Charlemont, Mass.

Daily discharge, in second-feet, of Deerfield River at Charlemont, Mass., for the years ending Sept. 30, 1913–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	121	435	435	245	790	222	2,400	2,630	154	245	318	369
2	294	352	448	179	630	3,070	6,780	2,180	196	162	406	240
3	245	396	528	297	490	3,070	3,480	2,180	147	257	717	106
4	235	322	760	326	490	1,740	2,040	2,250	210	304	688	158
5	184	409	633	297	490	1,110	1,530	2,870	753	194	565	403
6	118	340	612	297	455	1,010	1,260	3,760	528	995	677	335
7	115	299	854	297	420	790	1,250	2,400	334	740	486	149
8	70	310	2,960	271	326	630	2,250	1,650	188	701	281	413
9	115	11,000	1,340	245	245	525	8,790	1,420	201	516	508	451
10	154	6,520	942	245	245	388	3,480	1,150	220	521	687	399
11	118	1,470	806	200	222	326	2,630	960	154	514	781	362
12	124	1,230	619	82	158	271	3,950	854	143	422	884	362
13	235	906	626	122	93	245	3,390	3,040	135	179	633	279
14	260	782	612	158	158	200	2,630	2,110	68	157	378	216
15	184	798	640	200	179	200	3,040	1,360	429	112	514	362
16	132	700	528	200	122	122	2,550	1,030	448	426	648	248
17	139	605	535	222	388	158	2,110	775	487	439	753	207
18	124	563	514	271	297	1,220	3,210	708	266	295	648	79
19	118	549	416	204	245	1,010	8,520	619	121	266	612	61
20	299	1,210	322	255	245	915	15,700	570	76	582	715	48
21	1,200	1,200	390	271	297	630	7,980	521	196	654	924	30
22	556	798	442	271	245	490	3,760	494	422	728	517	32
23	370	655	416	222	200	420	3,760	442	528	711	299	33
24	282	591	364	297	179	355	2,870	370	528	477	466	33
25	838	542	396	830	222	200	2,710	225	383	276	633	40
26	3,390	480	383	790	158	870	3,040	310	299	397	610	58
27	3,390	435	322	750	179	4,150	3,950	358	205	738	634	69
28	1,360	396	346	790	179	9,340	4,660	277	132	746	357	39
29	806	370	326	750	.....	4,150	4,250	240	158	762	353	58
30	640	402	297	790	.....	2,400	5,210	210	266	758	909	73
31	521	.....	297	870	.....	2,040	.....	166	.....	498	584	.....
1914–15.												
1	128	95	166	70	400	1,060	392	985	123	1,770	389	571
2	168	75	304	76	715	873	413	850	209	1,860	738	326
3	77	51	304	87	570	688	412	802	125	1,930	876	465
4	51	84	277	76	535	601	383	753	245	1,440	7,020	453
5	29	66	245	83	400	626	416	651	243	1,160	6,320	230
6	36	45	179	76	465	632	465	579	213	1,230	2,330	233
7	42	79	79	1,250	790	592	649	474	232	758	1,910	360
8	81	70	175	1,300	870	560	885	479	256	11,400	1,280	578
9	61	38	106	715	605	505	1,630	444	271	12,200	962	498
10	52	81	79	535	400	500	2,440	472	340	2,710	825	493
11	32	112	135	396	340	497	9,350	366	348	1,340	587	303
12	31	70	147	364	570	428	8,270	305	278	929	503	140
13	49	56	171	389	640	402	3,600	266	194	678	480	337
14	37	41	230	358	960	389	2,090	325	281	515	425	1,410
15	45	157	158	250	435	426	1,780	290	320	460	370	802
16	60	649	109	245	2,870	360	1,700	239	359	237	423	463
17	137	889	94	245	1,420	424	1,670	203	237	293	400	511
18	257	415	72	542	870	362	1,520	465	250	380	392	371
19	136	225	74	5,210	750	324	1,390	370	185	294	283	252
20	328	166	81	3,140	605	335	1,360	272	124	565	369	302
21	202	57	109	1,420	570	361	1,110	267	99	551	283	1,220
22	150	70	109	878	535	331	844	322	240	698	733	1,580
23	102	103	97	629	640	364	717	318	108	580	2,620	662
24	66	87	97	1,250	1,050	457	596	186	104	500	1,140	626
25	42	106	94	1,070	12,100	619	486	328	152	327	1,250	383
26	60	109	76	847	5,440	871	537	138	136	422	950	330
27	99	230	43	598	2,250	612	459	263	145	1,770	641	727
28	82	500	53	581	1,360	500	426	282	262	1,170	522	638
29	55	376	62	340	.....	509	538	243	362	776	349	503
30	54	201	76	196	.....	380	695	199	265	593	618	461
31	66	.....	109	389	.....	365	.....	152	.....	393	758	.....

NOTE.—Discharge determined from a well-defined rating curve (see fig. 6) by averaging the discharge for 24 hourly periods each day, except for short periods when automatic gage was not working properly. Discharge relation affected by ice as follows: Dec. 29, 1913, to Mar. 26, 1914; Nov. 19, 1914, to Jan. 18, 1915; and Jan. 29 to Feb. 23, 1915; daily discharge estimated by hydrograph method of determining backwater due to ice.

Monthly discharge of Deerfield River at Charlemont, Mass., for the years ending Sept. 30, 1913–1915.

[Drainage area, 362 square miles.]

Month.	Observed discharge (second-feet).			Gain or loss in storage at Somerset, Vt. (millions of cubic feet).	Discharge without storage (second-feet).		Run-off (depth in inches on drainage area).	Accuracy
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.		
1913.								
June 19–30	255	81	140					
July	422	47	175	−196	103	0.285	0.33	A.
August	685	38	219	−352	79.5	.220	.25	A.
September	1,530	38	167	+13.5	172	.475	.53	A.
1913–14.								
October	3,390	70	540	+148	595	1.64	1.89	A.
November	11,000	299	1,170	+361	1,310	3.62	4.04	A.
December	2,960	297	616	+107	657	1.81	2.09	A.
January	870	82	363	+ 61.4	387	1.07	1.23	B.
February	790	93	298	+ 29.6	311	.859	.89	B.
March	9,340	122	1,360	+181	1,430	3.95	4.55	B.
April	15,700	1,250	4,120	+819	4,430	12.2	13.61	A.
May	3,760	166	1,230	+445	1,390	3.84	4.43	A.
June	753	68	279	−245	182	.503	.56	A.
July	995	112	477	−631	250	.691	.80	A.
August	924	281	587	−909	244	.674	.78	A.
September	451	30	190	−339	65	.180	.20	A.
The year	15,700	30	935	+ 38.3	936	2.59	35.07	
1914–15.								
October	257	29	90.8	+ 31.1	102	.282	.32	A.
November	889	41	177	+ 84.8	210	.580	.65	B.
December	304	43	133	+ 70.5	159	.439	.51	B.
January	5,210	70	761	+254	856	2.36	2.72	B.
February	12,100	340	1,400	+285	1,520	4.20	4.37	D.
March	1,060	324	515	+ 72.7	542	1.50	1.73	A.
April	9,350	383	1,570	+439	1,740	4.81	5.37	A.
May	985	138	396	+147	451	1.25	1.44	A.
June	362	99	224	−253	126	.348	.39	A.
July	12,200	237	1,610	+239	1,700	4.70	5.42	A.
August	7,020	283	1,190	+225	1,270	3.51	4.05	A.
September	1,580	140	541	−206	462	1.28	1.43	A.
The year	12,200	29	712	+1,390	756	2.09	28.40	

NOTE.—Data in regard to amount of water stored in Somerset reservoir were furnished by the New England Power Co. through J. B. Mahoney, superintendent of power.

Days of deficiency in discharge of Deerfield River at Charlemont, Mass., during the years ending Sept. 30, 1913–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.			Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.		
		1912–13[a]	1913–14	1914–15			1912–13[a]	1913–14	1914–15
25	2.8	.....	.....	.....	2,000	227	104	317	347
50	5.7	12	7	13	2,500	284	.....	328	351
100	11.4	46	18	59	3,000	341	.....	336	354
200	22.7	72	64	99	3,500	398	.....	347	355
300	34.1	88	132	141	4,000	455	.....	352	356
400	45.5	94	171	192	5,000	568	.....	356	356
500	56.8	98	205	228	6,000	682	.....	357	358
600	68.2	100	230	261	8,000	909	.....	360	360
800	90.9	103	281	295	10,000	1,140	.....	363	362
1,000	114	103	297	314	16,000	2,270	.....	365	365
1,500	170	103	314	336					

[a] June 19 to Sept. 30.

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

DEERFIELD RIVER AT SHELBURNE FALLS, MASS.

LOCATION.—At the plant of the Greenfield Electric Light & Power Co. (Pl. VI), 1 mile below Shelburne Falls, from June 1, 1907, to December 31, 1913. At power station No. 3 of the New England Power Co., from January 1, 1914, to September 30, 1915.

DRAINAGE AREA.—501 square miles at first location. 500 square miles at second location.

RECORDS AVAILABLE.—June 1, 1907, to September 30, 1915.

DAM AND POWER PLANT.—The dam at the plant of the Greenfield Electric Light & Power Co. is of concrete, of ogee section, and is similar to one that has been rated. The height of the dam was increased 3 feet in the fall of 1908. Ratings of one of the two power units have been made by engineers of the Geological Survey for use in conjunction with the Holyoke ratings of the wheels.

COMPUTATIONS OF DISCHARGE.—The flow is computed from records of gate openings, power readings, height of water on the dam, in the fore bay, in the tailrace, and at the wasteways. The total electrical output is measured twice a day.

EXTREMES OF DISCHARGE.—Maximum 24-hour discharge computed 1907–1915: 21,300 second-feet, April 15, 1909. Minimum 24-hour discharge, practically zero at various times when water was held back by dams.

ACCURACY.—Owing to the extreme care with which the readings are made in winter and summer, the records are considered good.

COOPERATION.—Records furnished by H. K. Barrows, Boston, Mass., and by the New England Power Co.

Daily discharge, in second-feet, of Deerfield River at Shelburne Falls, Mass., for the years ending Sept. 30, 1907–1915.

Days.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907.												
1									253		174	86
2									214		206	63
3									251		165	118
4									246		216	210
5									246		209	1,190
6									252		199	620
7									256		202	417
8									255		181	235
9									222		193	220
10									258		138	228
11									251		60	231
12									249		104	421
13									247		67	244
14									253		92	258
15									254		104	220
16									225		33	156
17									254		71	312
18									256		108	173
19									247		108	147
20									241		77	139
21									204		99	133
22									227	432	129	134
23									199	255	92	305
24									189	258	99	1,980
25									240	554	106	1,370
26									433	1,370	87	771
27									408	817	84	765
28									320	368	105	404
29									251	233	113	4,100
30									834	231	53	1,370
31										162	114	

Daily discharge, in second-feet, of Deerfield River at Shelburne Falls, Mass, for the years ending Sept. 30, 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	866	2,380	250	1,080	599	742	2,740	7,190	3,630	170	200	99
2	648	2,390	287	1,080	400	718	2,350	2,500	2,500	159	177	138
3	470	7,680	295	776	237	944	1,810	2,090	1,840	137	92	139
4	800	3,580	267	599	215	958	1,290	1,650	1,230	146	132	102
5	1,370	2,380	192	490	344	968	1,290	1,430	1,100	136	113	118
6	1,060	1,980	247	318	730	646	1,350	848	1,080	195	337	143
7	553	16,300	351	381	383	954	2,440	878	554	284	328	135
8	1,090	3,540	357	1,090	485	826	2,730	8,910	295	248	266	130
9	1,360	1,970	452	723	718	729	6,590	5,220	289	157	372	120
10	978	1,630	2,350	625	599	730	3,340	3,110	259	135	558	110
11	867	1,220	2,320	624	599	1,240	4,360	2,350	257	130	272	100
12	872	857	1,870	793	774	969	2,910	1,590	259	98	275	90
13	730	644	955	1,380	581	1,250	2,170	1,830	288	98	332	80
14	675	647	967	1,340	583	1,660	1,490	2,140	235	106	273	70
15	406	557	833	1,360	1,470	1,850	1,440	3,410	187	139	268	67
16	396	477	728	908	7,020	2,260	4,280	2,500	983	94	179	79
17	331	341	633	1,020	2,650	1,250	1,820	1,960	576	101	150	65
18	241	405	632	719	1,560	1,250	1,810	1,670	419	79	1,110	88
19	264	397	544	815	974	1,120	4,730	1,520	258	279	419	58
20	252	408	552	433	1,100	1,250	2,920	1,670	269	213	298	40
21	296	411	535	443	848	1,250	1,960	1,520	179	242	258	77
22	279	397	432	628	994	1,550	1,230	2,670	182	221	252	55
23	283	436	2,370	731	844	1,500	1,490	6,090	182	495	239	.....
24	284	368	1,680	537	485	1,430	2,350	3,400	178	373	248	.....
25	288	435	1,920	383	218	4,410	2,160	2,660	409	573	206	.....
26	278	434	1,360	383	293	1,910	3,080	1,820	221	3,160	235	.....
27	237	483	1,080	914	1,010	7,730	2,730	1,520	174	1,850	265	.....
28	3,360	408	1,080	597	769	5,760	3,140	1,520	230	640	208	.....
29	10,100	398	1,070	830	506	10,600	2,740	998	153	326	183	.....
30	5,010	342	1,080	479	.....	6,580	1,820	1,100	186	235	144	.....
31	3,600	.....	1,670	184	.....	3,550	.....	6,080	.....	250	111	.....
1908–9.												
1	.....	158	196	150	150	933	771	2,000	559	177	99	121
2	.....	189	204	228	286	903	1,700	3,140	442	172	77	101
3	.....	173	90	171	308	742	2,400	2,200	475	245	57	88
4	.....	127	93	350	260	687	1,680	2,780	467	270	120	64
5	.....	151	102	371	386	751	2,460	2,580	466	253	113	114
6	.....	180	89	6,400	685	608	3,340	1,990	1,670	234	273	66
7	.....	155	169	1,700	1,680	665	9,040	3,850	863	205	264	127
8	.....	142	757	909	1,120	596	8,140	2,210	648	151	219	138
9	.....	150	528	711	542	594	4,610	1,650	511	152	112	122
10	.....	185	303	744	526	640	2,830	1,380	555	136	115	115
11	.....	167	343	619	765	1,280	1,860	1,240	1,100	146	101	219
12	.....	206	297	550	528	1,280	1,540	1,100	755	85	76	288
13	.....	282	320	342	479	898	2,610	857	522	182	113	133
14	.....	257	232	229	577	885	18,900	743	535	85	90	153
15	.....	221	263	492	463	667	21,300	646	550	119	82	140
16	.....	161	378	407	742	630	8,460	596	468	118	212	130
17	.....	193	179	279	404	586	7,290	847	408	133	1,140	106
18	.....	170	219	365	473	535	6,660	1,230	3,830	150	1,580	130
19	.....	121	193	237	410	580	5,850	970	1,370	136	606	74
20	.....	177	218	261	4,830	555	9,350	852	830	131	415	90
21	.....	239	337	297	3,390	564	4,600	743	643	141	361	47
22	55	212	271	381	2,140	541	5,610	633	417	136	246	99
23	50	179	155	553	1,370	539	3,620	815	534	128	181	92
24	60	208	132	735	2,240	633	2,620	688	473	127	190	222
25	76	247	149	1,780	4,290	1,230	2,190	638	341	165	167	219
26	129	268	163	1,000	2,460	2,980	2,250	624	345	152	125	212
27	390	348	295	619	1,740	1,530	1,910	551	241	134	104	179
28	471	352	178	593	1,280	1,220	3,470	1,100	212	138	136	3,780
29	405	373	147	417	.....	1,390	2,430	1,360	242	118	112	1,430
30	411	205	152	464	.....	1,250	2,250	1,080	194	111	119	578
31	271	.....	156	287	.....	1,120	.....	845	.....	91	110	.....

Daily discharge, in second-feet, of Deerfield River at Shelburne Falls, Mass., for the years ending Sept. 30, 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	448	220	362	151	636	11,200	4,880	1,070	1,590	222	136	56
2	311	350	309	232	500	6,360	4,120	989	1,180	189	104	71
3	292	355	290	200	577	4,250	2,970	954	925	186	135	14
4	237	377	288	223	499	2,990	2,630	1,070	710	172	135	90
5	252	311	275	236	496	2,350	2,510	1,010	660	171	141	229
6	229	223	231	297	288	2,580	2,870	887	3,570	190	136	710
7	207	228	249	1,100	204	4,950	2,940	756	2,240	169	104	707
8	161	240	259	321	318	3,300	2,070	684	1,540	193	114	304
9	179	228	219	638	532	2,290	1,430	625	1,170	125	96	243
10	145	240	193	565	490	1,630	1,140	744	1,170	113	101	184
11	150	171	87	403	583	1,430	1,010	724	2,520	94	196	16
12	191	215	129	404	343	1,300	1,030	657	2,590	152	260	120
13	261	212	287	317	409	1,410	919	552	2,210	131	192	103
14	282	196	222	278	212	1,580	821	526	1,440	102	113	174
15	222	196	474	295	385	1,180	790	724	1,160	105	140	155
16	194	188	385	284	418	1,060	782	618	961	131	104	111
17	189	250	317	254	725	1,070	749	512	1,170	81	136	92
18	191	294	287	1,140	706	879	850	604	1,290	100	106	56
19	244	344	265	902	620	869	1,930	942	1,090	278	62	84
20	267	245	238	1,050	617	1,660	1,320	1,010	818	235	75	78
21	270	250	245	1,560	825	3,080	1,050	799	666	262	82	143
22	300	281	239	16,900	2,050	2,660	858	942	491	121	108	110
23	598	292	215	5,920	1,070	3,110	944	709	447	141	53	73
24	698	306	206	3,330	970	3,560	710	618	508	88	97	115
25	565	266	196	2,460	906	9,460	653	786	247	121	120	85
26	612	368	185	1,680	815	8,220	4,750	1,710	248	145	82	149
27	565	386	189	1,400	1,150	4,580	4,170	1,390	281	188	50	117
28	482	337	179	1,060	9,830	4,080	2,020	865	278	397	39	144
29	322	423	192	1,040	.....	6,160	1,360	655	277	157	55	160
30	306	526	118	857	.....	7,480	1,220	565	275	152	63	193
31	372	.....	160	925	.....	5,840	.....	1,700	.....	145	65	.....
1910–11.												
1	146	185	193	576	297	420	1,310	3,600	373	218	200	397
2	112	167	155	2,330	517	331	1,110	5,920	476	200	158	300
3	244	498	122	5,450	205	264	959	2,850	410	196	160	185
4	90	957	156	3,120	244	251	961	1,890	324	167	129	269
5	128	908	100	1,420	354	217	1,060	1,280	301	184	158	280
6	111	876	117	1,010	396	219	5,160	1,090	363	153	43	652
7	92	462	140	750	292	214	8,700	965	2,520	153	123	1,040
8	111	326	144	957	213	213	5,020	711	1,730	105	92	980
9	68	280	119	680	219	243	4,130	752	826	124	125	2,530
10	115	273	77	336	336	223	2,240	710	683	118	158	2,090
11	89	310	56	338	271	183	2,060	607	720	135	103	910
12	144	280	96	566	215	237	1,990	636	1,200	118	70	775
13	109	273	97	723	246	235	2,840	901	3,480	91	59	459
14	118	298	123	537	262	444	4,600	701	1,830	101	75	351
15	100	262	121	689	226	614	6,730	521	1,300	41	103	328
16	62	226	110	241	220	402	4,540	534	896	0	179	911
17	102	209	139	177	219	317	2,900	456	807	95	247	657
18	86	172	33	434	330	314	2,120	354	631	133	122	434
19	135	200	140	423	327	323	2,290	927	530	149	132	365
20	101	133	112	386	281	298	2,260	805	440	112	150	313
21	73	149	134	574	266	368	2,050	587	374	119	181	289
22	93	225	115	550	234	354	2,460	424	353	80	131	640
23	131	169	105	510	224	677	2,130	446	322	62	143	607
24	190	157	242	284	201	498	1,990	383	294	122	81	452
25	219	251	594	318	213	501	3,330	447	257	172	142	559
26	171	183	273	318	257	782	4,090	414	375	315	204	351
27	158	221	278	491	768	5,030	4,470	438	437	216	251	354
28	171	125	304	2,840	605	6,200	4,940	357	411	145	258	420
29	252	209	286	1,860	.....	3,510	4,710	302	308	242	1,730	648
30	180	235	294	1,510	.....	4,120	3,760	229	260	276	903	1,490
31	189	.....	277	494	.....	1,360	.....	314	.....	253	639	.....

Daily discharge, in second-feet, of Deerfield River at Shelburne Falls, Mass, for the years ending Sept. 30, 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911-12.												
1	845	1,320	1,190	656	346	307	6,030	1,640	2,450	120	126	118
2	2,390	1,040	903	331	218	299	5,750	1,2 0	1,590	147	142	145
3	1,320	772	712	297	317	305	3,960	1,280	5,820	153	151	291
4	2,080	760	747	414	332	299	2,700	978	2,620	110	183	570
5	2,430	622	509	200	323	275	3,420	923	1,980	93	188	424
6	1,340	651	575	185	336	258	8,120	1,280	1,830	81	142	276
7	1,320	1,500	502	251	306	268	11,100	2,030	2,460	60	118	247
8	1,270	1,500	515	368	348	289	8,120	1,470	1,580	199	122	200
9	1,470	1,050	506	381	272	341	3,960	1,280	1,320	164	110	154
10	1,170	902	586	411	296	369	2,940	1,470	717	142	101	188
11	912	1,040	583	293	271	285	2,460	1,270	643	110	431	146
12	796	940	797	299	276	300	2,250	909	342	92	561	122
13	645	1,510	945	252	272	2,950	2,460	987	344	107	313	113
14	534	1,180	823	333	262	1,640	3,630	1,650	338	73	200	116
15	607	1,180	951	260	266	2,440	3,410	1,270	322	124	137	51
16	554	1,050	1,220	267	264	5,600	7,760	1,840	403	219	148	351
17	552	664	2,050	265	248	3,650	6,050	5,110	385	146	107	650
18	6,710	2,470	1,380	273	279	3,700	5,430	2,670	343	147	143	374
19	11,100	2,220	945	297	264	4,540	4,760	1,580	334	438	425	274
20	4,560	1,500	701	669	294	4,840	2,910	1,290	334	364	462	278
21	3,550	1,180	591	649	300	3,160	2,390	1,460	298	230	257	292
22	4,750	1,050	749	633	372	2,260	2,680	2,250	218	238	165	280
23	4,550	779	4,280	476	366	1,280	3,950	1,640	215	252	245	266
24	2,660	927	2,840	455	357	1,240	2,930	1,290	238	191	417	276
25	1,860	913	1,820	424	340	1,130	2,250	1,440	251	165	317	282
26	1,320	746	1,360	420	379	840	1,840	1,075	198	118	340	205
27	1,170	773	1,550	266	371	987	1,630	849	212	125	498	202
28	1,030	677	1,380	251	353	847	1,980	847	181	134	360	149
29	947	3,120	794	341	340	3,970	1,650	993	161	86	266	148
30	820	1,460	587	368	.....	4,840	1,650	6,670	121	118	260	240
31	906	.....	912	368	.....	3,640	.....	4,530	.....	100	178	.....
1912-13.												
1	388	1,190	659	1,890	2,710	1,180	3,470	889	1,120	122	286	58
2	311	2,060	967	1,360	1,490	799	1,870	863	1,050	120	273	96
3	327	1,660	5,250	2,490	1,450	641	1,500	612	930	142	101	96
4	274	1,340	2,560	3,360	1,440	763	1,480	451	785	67	244	97
5	238	1,180	1,780	2,000	1,200	570	1,870	658	345	56	286	123
6	213	1,060	3,680	1,530	1,320	495	1,800	545	360	61	393	154
7	142	1,340	3,220	3,380	1,030	463	1,500	389	315	113	492	58
8	212	4,320	2,100	4,290	1,210	339	1,330	467	256	240	582	135
9	182	2,670	1,580	2,890	1,240	395	1,330	357	444	114	215	117
10	142	2,000	1,430	2,110	1,040	1,500	1,030	369	349	145	303	160
11	270	1,490	1,260	1,550	557	1,340	2,300	253	284	171	565	159
12	474	1,500	930	4,150	498	1,020	4,600	345	254	148	700	110
13	308	1,510	839	2,750	381	1,330	3,130	335	280	142	462	150
14	592	3,820	986	1,730	471	5,470	2,980	352	194	327	348	100
15	396	3,110	421	1,440	397	7,110	2,070	311	117	270	331	114
16	281	2,020	651	1,370	376	4,810	1,680	326	250	242	174	70
17	267	1,820	1,000	3,390	689	2,080	1,500	344	258	128	28	82
18	223	1,680	865	5,730	413	1,330	1,330	305	206	100	104	58
19	225	1,340	1,450	4,800	357	1,170	1,130	380	180	69	316	57
20	212	1,190	1,780	2,700	329	2,980	963	403	240	121	184	149
21	295	1,340	1,150	3,820	465	3,720	1,020	355	244	230	100	0
22	290	1,350	1,060	2,920	879	4,890	1,030	390	224	261	127	892
23	4,350	1,180	858	2,110	1,020	1,790	889	1,710	227	220	108	1,600
24	13,900	1,140	472	2,710	789	3,220	755	2,700	212	228	42	733
25	6,760	1,510	365	1,920	600	4,280	756	1,620	171	198	124	188
26	4,540	1,350	525	1,450	469	12,100	749	1,190	164	176	78	302
27	2,420	1,190	635	1,530	480	19,200	661	903	144	185	98	123
28	2,060	1,140	619	923	1,230	7,460	755	1,510	162	232	55	74
29	1,690	470	657	1,060	.....	3,480	1,870	3 570	112	294	165	181
30	1,510	620	986	1,073	.....	2,020	1,490	2 030	150	410	124	139
31	1,360	.....	3,460	1,071	.....	2,740	.....	1,370	.....	277	157	.....

Daily discharge, in second-feet, of Deerfield River at Shelburne Falls, Mass., for the year ending Sept. 30, 1907–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	158	389	537	393	885	412	2,850	4,440	157	323	307	530
2	373	350	311	303	668	6,020	11,000	3,660	223	248	239	299
3	278	418	473	249	593	4,320	5,980	2,920	327	118	645	145
4	480	394	1,040	316	554	3,120	3,690	2,900	422	147	808	109
5	152	442	1,040	471	588	1,980	2,940	3,790	567	213	618	481
6	210	471	740	361	657	1,150	2,210	4,020	916	871	632	211
7	185	374	1,200	279	493	1,260	2,090	2,980	306	1,010	638	244
8	63	381	1,770	387	a 466	683	3,940	2,300	305	702	283	334
9	55	6,030	1,380	295	440	874	11,200	1,980	236	640	339	494
10	253	5,480	1,040	356	342	703	5,630	1,800	237	592	746	490
11	172	2,170	1,040	252	393	674	4,620	1,400	230	527	665	337
12	203	1,280	740	229	371	547	6,600	1,430	215	389	915	375
13	258	1,280	880	134	305	552	5,950	4,210	173	437	949	268
14	250	1,280	605	173	324	569	4,240	2,930	81	179	406	306
15	252	727	605	125	308	592	4,990	2,160	352	167	367	305
16	251	824	740	145	332	538	4,360	1,670	549	346	375	283
17	148	873	740	345	476	859	3,670	1,510	595	457	795	191
18	184	568	740	161	304	1,250	3,750	1,100	360	350	764	182
19	17	579	669	283	339	995	10,900	842	224	308	770	82
20	655	1,270	342	236	327	892	14,500	713	98	523	691	a 70
21	1,400	1,280	334	240	208	688	12,000	616	22	570	1,060	59
22	832	874	550	215	265	680	6,670	742	590	757	1,010	40
23	495	696	672	245	322	721	4,400	532	584	734	263	a 40
24	520	715	377	495	278	682	4,020	441	530	664	450	a 40
25	1,560	670	349	2,710	255	618	3,950	450	557	276	607	41
26	4,580	567	496	1,200	248	1,140	4,700	206	329	223	568	25
27	2,930	409	429	1,080	283	6,160	6,340	333	176	638	659	a 55
28	1,730	481	150	702	431	15,100	5,960	455	61	706	418	85
29	1,050	536	387	799	.....	8,660	5,380	341	315	809	425	64
30	598	432	323	807	.....	5,330	7,010	190	265	880	a 619	53
31	609	.....	346	1,080	.....	4,230	.....	232	.....	652	813	.....
1914–15.												
1	82	28	205	95	482	1,110	611	1,470	276	1,000	382	762
2	125	78	412	116	860	952	637	1,500	287	1,870	1,760	600
3	206	146	307	11	730	1,000	640	1,120	207	2,570	1,270	535
4	29	37	484	211	704	764	479	1,030	330	1,580	13,600	583
5	81	110	428	159	537	867	743	1,060	162	1,260	9,240	248
6	62	44	80	108	684	1,000	750	657	171	1,360	3,350	244
7	5	49	268	762	1,150	948	1,010	759	300	868	2,780	621
8	45	67	165	1,340	1,420	815	1,530	600	284	7,800	1,880	599
9	49	85	138	1,120	916	799	2,780	489	295	20,200	1,400	656
10	70	22	111	465	645	716	3,420	574	389	4,950	1,150	549
11	4	78	149	605	473	769	10,800	502	302	1,360	962	524
12	0	195	219	511	632	667	12,400	372	312	914	602	68
13	89	274	200	530	722	525	5,400	336	192	800	704	310
14	25	64	188	500	571	555	3,460	340	255	621	689	1,950
15	56	21	102	389	638	603	2,640	506	564	626	380	1,060
16	75	716	74	355	3,850	579	2,880	196	312	360	642	649
17	194	1,200	92	240	2,600	585	2,030	450	343	272	700	532
18	223	464	7	1,410	1,620	540	2,320	470	345	601	445	454
19	288	307	109	6,630	1,040	508	2,470	572	254	344	441	219
20	209	379	59	4,810	846	462	1,820	447	34	661	432	424
21	361	174	180	2,660	783	571	1,910	314	177	545	412	1,600
22	294	247	123	999	700	483	1,200	580	317	980	1,550	1,940
23	68	320	128	631	777	541	1,140	279	160	849	3,800	914
24	169	110	135	1,020	1,570	680	1,150	383	159	598	1,740	594
25	9	127	58	1,310	8,000	839	511	363	140	300	1,640	549
26	135	100	90	960	8,500	1,240	799	428	216	481	1,300	219
27	75	555	40	809	4,260	855	616	367	133	1,830	899	935
28	53	560	91	671	3,170	603	579	278	214	1,610	571	866
29	149	557	138	556	.....	929	518	455	514	834	422	618
30	91	475	274	400	.....	584	765	98	238	831	994	542
31	20	.....	234	209	.....	480	.....	57	.....	549	1,050	.....

a Interpolated.

Monthly discharge of Deerfield River at Shelburne Falls, Mass., for the years ending Sept. 30, 1907–1915.

[Drainage area, 501 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1907.					
June	834	189	274	0.547	0.61
July 22–31	1,370	162	468	.934	.35
August	216	33	122	.244	.28
September	4,100	63	567	1.13	1.26
1907–8.					
October	10,100	237	1,230	2.46	2.84
November	16,300	341	1,800	3.59	4.00
December	2,370	192	947	1.89	2.18
January	1,380	184	731	1.46	1.68
February	7,020	215	965	1.93	2.08
March	10,600	646	2,210	4.41	5.08
April	6,590	1,230	2,550	5.09	5.68
May	8,910	848	2,700	5.39	6.21
June	3,630	153	620	1.24	1.38
July	3,160	79	370	.739	.85
August	1,110	92	274	.547	.63
September 1–22	143	40	95.6	.191	.16
1908–9.					
October 22–31	471	50	232	.463	.17
November	373	121	207	.413	.46
December	757	89	236	.471	.54
January	6,400	150	730	1.46	1.68
February	4,830	150	1,230	2.46	2.56
March	2,980	535	904	1.80	2.08
April	21,300	771	5,060	10.1	11.27
May	3,850	551	1,350	2.69	3.10
June	3,830	194	689	1.38	1.54
July	270	85	152	.303	.35
August	1,580	57	249	.497	.57
September	3,780	47	313	.625	.70
1909–10.					
October	698	145	314	.627	.72
November	526	171	284	.567	.63
December	474	87	242	.483	.56
January	16,900	151	1,500	2.99	3.45
February	9,830	204	970	1.94	2.02
March	11,200	869	3,630	7.25	8.35
April	4,880	653	1,850	3.69	4.12
May	1,710	512	851	1.70	1.96
June	3,570	247	1,120	2.24	2.50
July	397	81	163	.33	.38
August	260	39	110	.22	.25
September	710	14	163	.33	.37
The year	16,900	14	933	1.86	25.31
1910–11.					
October	252	62	132	.26	.30
November	957	125	307	.61	.68
December	594	33	169	.34	.39
January	5,450	177	997	1.99	2.29
February	768	201	301	.601	.63
March	6,200	183	947	1.89	2.18
April	8,700	959	3,230	6.45	7.20
May	5,920	229	986	1.97	2.27
June	3,480	257	774	1.55	1.73
July	315	0	148	.295	.34
August	1,730	43	234	.467	.54
September	2,530	185	668	1.33	1.48
The year	8,700	0	741	1.48	20.03

Monthly discharge of Deerfield River at Shelburne Falls, Mass., for the years ending Sept. 30, 1907–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1911–12.					
October	11,100	534	2,130	4.25	4.90
November	3,120	622	1,180	2.36	2.63
December	4,280	502	1,100	2.20	2.54
January	669	185	366	.73	.84
February	379	218	309	.62	.67
March	5,600	258	1,840	3.68	4.24
April	11,100	1,630	4,010	8.00	8.93
May	6,670	847	1,780	3.55	4.09
June	5,820	121	940	1.88	2.10
July	438	60	156	.31	.36
August	561	101	245	.49	.56
September	650	51	248	.50	.55
The year	11,100	51	1,190	2.38	32.41
1912–13.					
October	13,900	142	1,450	2.89	3.33
November	4,320	470	1,650	3.30	3.68
December	5,250	365	1,430	2.84	3.27
January	5,730	923	2,430	4.86	5.60
February	2,710	329	876	1.75	1.82
March	19,200	339	3,240	6.48	7.47
April	4,600	661	1,630	3.25	3.63
May	3,570	253	849	1.70	1.96
June	1,120	112	334	.67	.75
July	410	56	181	.36	.42
August	700	28	244	.49	.56
September	1,600	0	212	.42	.47
The year	19,200	0	1,210	2.42	32.96
1913–14.					
October	4,580	17	674	1.35	1.56
November	6,030	350	1,070	2.14	2.39
December	1,770	150	679	1.35	1.56
January	2,710	125	486	.972	1.12
February	885	248	416	.832	.87
March	15,100	412	2,320	4.64	5.35
April	14,500	2,090	5,850	11.7	13.05
May	4,440	190	1,720	3.44	3.97
June	916	22	333	.666	.74
July	1,010	118	499	.998	1.15
August	1,060	239	608	1.22	1.41
September	530	25	206	.412	.46
The year	15,100	17	1,240	2.48	33.63
1914–15.					
October	361	0	108	.216	.25
November	1,200	21	253	.506	.56
December	484	7	173	.346	.40
January	6,630	11	987	1.97	2.27
February	8,500	473	1,750	3.30	3.44
March	1,240	462	732	1.46	1.68
April	12,400	479	2,300	4.60	5.13
May	1,500	57	552	1.10	1.27
June	564	34	266	.532	.59
July	20,200	272	1,920	3.84	4.43
August	13,600	380	1,850	3.70	4.27
September	1,950	68	679	1.36	1.52
The year	20,200	0	959	1.92	25.81

Days of deficiency in discharge of Deerfield River at Shelburne Falls, Mass., during the years ending Sept. 30, 1908–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.							
		[a] 1907–8	[b] 1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15
25	2.8	.....	.....	2	1	.....	1	2	9
50	5.7	1	1	3	4	.....	3	7	19
100	11.4	17	24	27	25	7	20	19	46
150	17.0	39	71	67	79	41	52	27	66
200	22.7	57	111	104	110	57	72	43	82
250	28.4	76	138	139	150	75	93	67	101
300	34.1	110	157	171	184	119	113	88	115
400	45.5	132	176	196	226	162	150	143	144
500	56.8	156	197	209	251	176	168	175	171
600	68.2	174	224	223	265	190	175	205	212
700	79.5	185	242	239	280	202	187	235	241
800	90.9	200	254	255	290	215	197	256	261
900	102	213	263	266	295	222	205	272	275
1,000	114	227	267	278	307	240	213	276	287
1,200	136	244	275	302	312	254	240	289	304
1,400	159	262	288	308	317	276	262	299	314
1,600	182	276	292	317	320	289	285	304	323
2,000	227	299	303	323	327	303	303	310	336
2,500	284	314	315	331	337	320	318	315	338
3,000	341	326	321	341	343	330	330	323	346
3,500	398	334	325	345	346	334	340	323	348
4,000	455	339	329	347	349	343	346	331	352
5,000	568	343	333	355	357	352	356	344	355
6,000	682	346	335	357	362	357	359	351	356
7,000	795	350	337	359	364	361	360	357	357
8,000	909	354	338	360	364	362	362	358	358
9,000	1,020	355	340	361	365	364	362	359	360
10,000	1,140	355	342	363	.....	364	362	359	361
15,000	1,700	357	342	364	.....	366	364	364	364
20,000	2,270	358	343	365	.....	.....	365	365	364
25,000	2,840	.....	344	.....	.....	.....	.....	.....	365

[a] Period Oct. 1 to Sept. 22. [b] Period Oct. 22 to Sept. 30.

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

DEERFIELD RIVER NEAR DEERFIELD, MASS.

LOCATION.—At suspension highway bridge, one-fourth mile south of West Deerfield railroad station and about 2 miles from Deerfield.

DRAINAGE AREA.—550 square miles.

RECORDS AVAILABLE.—March 29, 1904, to December 15, 1905; also a discharge measurement made September 21, 1906.

GAGE.—Chain attached to bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of rock, gravel, and sand; one channel at all stages; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 7.2 feet at 1.15 p. m., January 7, 1905; approximate discharge, 17,300 second-feet. Minimum stage recorded: 1.58 feet September 21, 1906; discharge, 85 second-feet.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Flow regulated by operation of several power plants above station.

ACCURACY.—On account of the unknown range of diurnal fluctuation the estimates of discharge, which are based on two gage readings a day, can be considered only approximate.

Discharge measurements of Deerfield River near Deerfield, Mass., during 1904–1906.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1904.		*Feet.*	*Sec.-ft.*	1905.		*Feet.*	*Sec.-ft.*
Mar. 30	N. C. Grover	3.61	2,390	Apr. 4	T. W. Norcross	3.97	3,710
Apr. 11	S. K. Clapp	4.68	5,810	Aug. 16	do	3.29	1,680
25	do	4.58	5,010	16	do	3.56	2,290
May 18	do	3.75	3,420	16	do	3.69	2,520
June 1	do	2.81	590	17	do	3.68	2,380
20	do	2.70	850	17	do	3.51	2,000
July 28	do	2.60	513	17	do	3.42	1,840
Aug. 17	do	2.45	275	31	do	3.12	1,310
Sept. 17	T. W. Norcross	3.21	1,260				
Oct. 27	do	2.90	981	1906.			
Nov. 30	do	[a] 2.60	531	Sept. 21	F. E. Pressey	1.58	85

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Deerfield River near Deerfield, Mass., for 1904–5.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.
1904.									
1		3,470	5,170	760	620	280	220	1,760	490
2		7,020	4,510	620	910	280	180	995	555
3		3,760	3,330	690	555	325	280	690	370
4		2,550	3,060	835	555	370	280	620	370
5		2,550	2,680	910	490	280	280	490	370
6		3,330	2,080	760	430	280	280	490	280
7		3,900	1,970	1,170	430	250	220	430	370
8		4,200	1,750	2,080	490	220	220	370	280
9		8,460	1,260	11,200	430	280	220	370	220
10		7,420	1,860	3,470	370	370	370	325	220
11		5,520	2,080	2,080	370	760	490	760	220
12		3,900	1,650	1,170	370	490	325	760	220
13		3,060	1,450	910	370	430	250	690	220
14		2,200	1,360	910	370	370	220	835	2 0
15		1,860	1,080	760	325	490	9,120	760	325
16		2,080	3,060	760	325	370	2,430	620	280
17		1,550	3,330	620	325	280	1,260	555	220
18		1,860	3,060	620	430	370	995	490	220
19		2,550	5,340	620	370	370	835	430	280
20		1,650	4,830	555	430	555	555	370	325
21		1,550	2,550	490	280	3,200	370	3,900	490
22		1,550	2,080	450	280	1,080	325	5,880	760
23		2,080	1,650	430	280	555	325	2,430	620
24		2,430	1,450	490	280	430	430	1,080	490
25		4,510	1,360	490	325	370	490	760	370
26		4,510	1,450	760	430	370	490	760	280
27		4,830	1,450	430	490	325	490	760	220
28		10,300	1,080	370	490	280	490	620	250
29	2,930	10,700	910	250	370	280	760	620	280
30	2,430	6,250	620	490	280	220	4,200	490	220
31	2,430		835		280	220		370	

Daily discharge, in second-feet, of Deerfield River near Deerfield, Mass., for 1904–5—Continued.

Day.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1905.											
1	.....	.....	9,340	1,260	325	490	1,170	995	370	325	1,970
2	.....	.....	4,360	1,080	370	430	690	760	370	370	1,550
3	.....	.....	3,470	760	280	370	430	8,680	370	370	12,000
4	.....	.....	3,200	760	370	370	370	6,820	430	490	5,170
5	.....	.....	3,900	995	370	490	280	4,830	490	370	2,430
6	.....	.....	8,250	952	370	555	250	2,430	370	835	1,450
7	17,300	.....	4,510	910	370	555	370	1,760	370	1,360	1,260
8	4,830	.....	2,800	835	620	370	280	1,450	430	1,080	1,080
9	2,680	.....	2,200	760	490	325	280	1,260	430	910	910
10	1,760	.....	2,800	690	490	280	280	1,080	370	620	1,080
11	1,760	.....	7,830	690	430	325	280	620	370	490	1,170
12	3,470	.....	7,830	370	370	325	1,170	3,610	1,550	430	1,080
13	3,200	.....	4,830	620	370	325	910	2,080	1,170	430	910
14	.....	.....	3,760	620	370	280	690	1,450	910	370	835
15	.....	.....	3,200	620	325	250	370	1,080	835	370	760
16	.....	.....	2,430	1,170	280	220	2,080	910	555	555	.....
17	.....	.....	1,860	1,450	280	220	2,310	1,080	370	620	.....
18	.....	.....	1,650	1,260	280	180	910	3,060	430	555	.....
19	.....	.....	1,360	1,080	220	280	555	5,700	555	370	.....
20	.....	.....	1,260	555	430	280	220	3,060	1,170	325	.....
21	.....	.....	2,080	620	910	280	180	2,550	1,860	490	.....
22	.....	.....	3,900	620	4,200	250	325	1,860	910	370	.....
23	.....	.....	3,200	490	2,080	220	370	1,360	835	490	.....
24	.....	.....	1,760	490	1,080	180	280	995	760	280	.....
25	.....	.....	1,450	370	760	220	280	760	690	325	.....
26	.....	.....	1,550	370	690	250	325	760	620	370	.....
27	.....	14,000	1,860	325	1,260	250	325	690	490	325	.....
28	.....	8,460	1,650	370	835	250	280	620	430	280	.....
29	.....	8,680	1,650	370	620	280	250	555	370	1,170	.....
30	.....	10,500	1,450	370	620	1,860	370	490	325	5,520	.....
31	.....	12,700	.....	370	.....	2,080	1,360	.....	325	.....	.....

NOTE.—Discharge determined from a rating curve fairly well defined between 370 and 7,000 second-feet.

Monthly discharge of Deerfield River near Deerfield, Mass., for 1904–5.

[Drainage area, 550 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1904.					
April	10,700	1,550	4,050	7.36	8.21
May	5,340	620	2,270	4.13	4.76
June	11,200	250	1,200	2.18	2.43
July	910	280	411	.747	.86
August	3,200	220	476	.865	1.00
September	9,120	180	915	1.66	1.85
October	5,880	325	983	1.79	2.06
November	760	220	336	.611	.68
1905.					
January 7–13	17,300	1,760	5,000	9.09	2.37
March 27–31	14,000	8,460	10,900	19.80	3.68
April	9,340	1,260	3,380	6.15	6.86
May	1,450	325	716	1.30	1.50
June	4,200	220	682	1.24	1.58
July	2,080	180	421	.765	.88
August	2,310	180	588	1.07	1.23
September	8,680	490	2,110	3.84	4.28
October	1,860	325	630	1.15	1.33
November	5,520	280	696	1.27	1.42
December 1–15	12,000	760	2,240	4.07	2.27

CHICOPEE RIVER BASIN.

GENERAL FEATURES.

Chicopee River, the largest tributary of the Connecticut with respect to drainage area, is formed near Three Rivers, Mass., by the confluence of Ware and Quaboag rivers, the third river, from which the town derives its name, being the Swift, which is tributary to Ware River, about a mile above the mouth of the Quaboag.

Ware River, which drains the larger area and is therefore considered the continuation of the main stream, is formed at Barre Falls by the union of two branches. The eastern or main branch rises in the town of Westminster, in Worcester County, about a mile east of the head of the western branch, flows southwesterly 10 miles to New Boston, where it turns abruptly and flows northwestward to Barre Falls. The course of the western branch is also southwesterly to the point of junction. From Barre Falls the general course of the Ware is southwestward to Three Rivers, where it receives the Quaboag. Below the mouth of the Quaboag the Chicopee flows south of west to the city of Chicopee, where it enters the Connecticut. The distance from the mouth of the Chicopee to the head of the eastern branch of Ware River is 60 miles, and the drainage area comprises 721 square miles, divided as follows:

	Square miles.
Ware River at Three Rivers, exclusive of Swift River	221
Swift River at mouth	213
Quaboag River at mouth	210
Chicopee River below Three Rivers	77

Swift River has three main branches, but the river is formed by its east and middle branches, and the middle branch is considered the continuation of the stream. This branch rises in North Pond, in the town of Orange, and flows southward. The east branch joins it 2 miles above Enfield, and the west branch comes in 1½ miles below that village. The distance from North Pond to the junction of the Swift and the Ware is about 30 miles. The gaging station at West Ware is 8 miles above the mouth of the river, and the drainage area at that point comprises 186 square miles.

Quaboag River, the most southerly of the three principal tributaries of the Chicopee, flows from Quaboag Pond in the town of Brookfield. The principal feeder of Quaboag Pond is East Brookfield River, whose headwaters are in the town of Rutland.[1] The general course of the Quaboag is southwesterly, and the distance from Quaboag Pond to Three Rivers is 23 miles. The gaging station at West Brimfield is 9 miles above the mouth, and the drainage area at that point is 150 square miles. At West Warren, 12 miles above the mouth, the drainage area is 144 square miles.

[1] See gazetteer, p. 332.

The country drained by the Chicopee is hilly, and the slope of the river averages 15 feet or more to the mile. Many lakes and ponds drain to the stream through its numerous tributaries, and the summer flow is well sustained.

The Chicopee is one of the most completely controlled streams in Massachusetts, as the natural pond area is large and is supplemented by artificial ponds formed at the numerous power plants. (See Pl. IX, *B*.) These ponds and reservoirs materially retard floods and equalize the flow throughout the year.

WARE RIVER NEAR WARE, MASS.

LOCATION.—At the steel highway bridge about 2 miles above the village of Ware.

DRAINAGE AREA.—162 square miles.

RECORDS AVAILABLE.—Discharge measurements September 15, 1904, to March 8, 1911.

GAGE.—Chain attached to the bridge.

DISCHARGE MEASUREMENTS.—Made from the bridge or by wading.

CHANNEL AND CONTROL.—Channel is subject to growth of grass and weeds during the summer, and on account of this the control is not permanent. At high stages the control is at the dam of the Otis Co., 2½ miles below station.

WINTER FLOW.—Stream seldom freezes at the gage, but the discharge relation is affected by backwater from ice farther downstream.

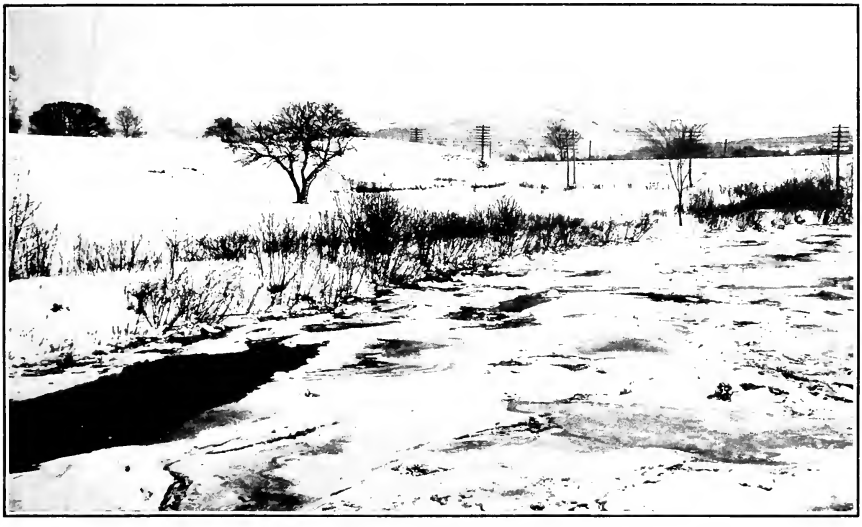
REGULATION.—Flow regulated by the operation of mills above the station, the nearest one being at Gilbertville, a little over a mile distant.

ACCURACY.—On account of the large diurnal fluctuation and the shifting control below the station, the gage-height record obtained at this station is not considered a true index to the discharge. This record and estimates of discharge are withheld from publication here, and figures for this station published in previous reports should be used with caution.

Discharge measurements of Ware River near Ware, Mass., during 1904–1911.

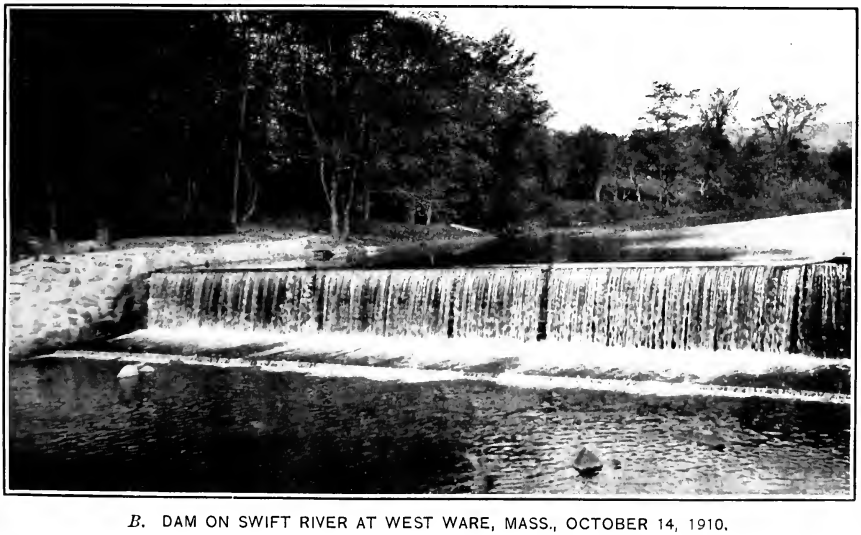
Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1904.		*Feet.*	*Sec.-ft.*	1907.		*Feet.*	*Sec.-ft.*
Sept. 15	H. K. Barrows	4.44	863	Apr. 26	Wood and Mention	3.43	489
20	T. W. Norcross	2.59	169	May 18	D. M. Wood	3.35	408
Oct. 5	do	2.63	166	Sept. 24	do	5.55	[b]1,150
19	do	2.70	205				
29	do	2.80	193	1908.			
Nov. 14	do	2.46	133	Mar. 2	D. M. Wood	3.38	243
				Apr. 25	do	3.14	310
1905.				Sept. 26	Wood and French	2.56	96.9
Mar. 28	T. W. Norcross	6.92	2,550				
28	do	6.96	2,600	1909.			
Apr. 1	do	5.75	1,690	Jan. 2	D. M. Wood	[c]2.83	160
7	do	5.06	1,240	July 14	do	2.47	115
13	do	4.00	758	Aug. 5	do	2.50	111
29	do	2.74	214	24	do	2.51	123
May 17	do	2.89	272	Oct. 9	do	2.60	130
July 29	do	2.46	136	Dec. 20	F. F. Henshaw	[c]3.03	67.1
Aug. 11	do	2.37	122				
11	do	1.94	43	1910.			
Sept. 7	do	5.20	1,100	Mar. 2	T. W. Norcross	6.80	2,240
26	do	2.77	225	2	do	6.76	2,230
1906.				1911.			
Mar. 21	T. W. Norcross	[a]3.40	301	Mar. 8	F. J. Shuttleworth	2.56	140
Apr. 7	do	4.17	741	8	C. S. De Golyer	2.60	163
Oct. 18	F. E. Pressey	3.05	237				

[a] Discharge relation may have been affected by ice.
[b] Results uncertain; floating grass interfered with meter.
[c] Discharge relation affected by ice.

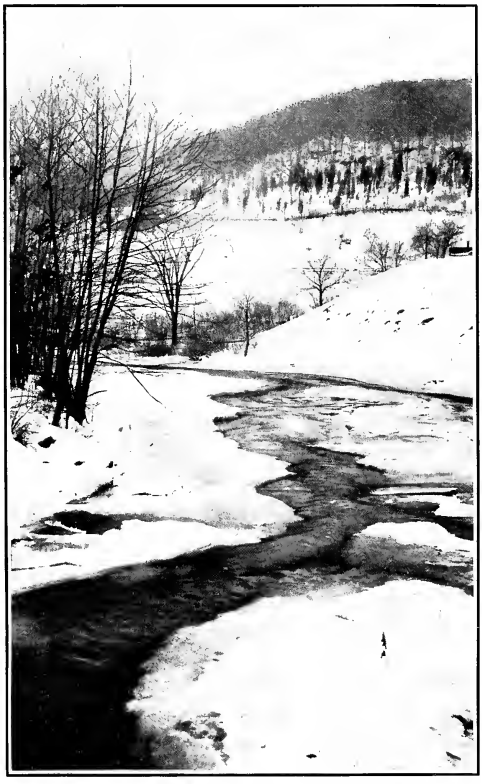


A. WARE RIVER AT GIBBS CROSSING, MASS., FEBRUARY 27, 1914.

Looking upstream.



B. DAM ON SWIFT RIVER AT WEST WARE, MASS., OCTOBER 14, 1910.



A. QUABOAG RIVER AT WEST BRIMFIELD, MASS., FEBRUARY 28, 1914.

B. DAM ON CHICOPEE RIVER AT RED BRIDGE, MASS., AUGUST 30, 1914.

WARE RIVER AT GIBBS CROSSING, MASS.

LOCATION.—Just above the highway bridge at the point known as Gibbs Crossing (Pl. VIII, *A*), about 3 miles below Ware.

DRAINAGE AREA.—201 square miles.

RECORDS AVAILABLE.—August 20, 1912, to September 30, 1915.

GAGES.—Barrett and Lawrence water-stage recorder on the right bank referred to gage datum by a hook gage inside of well; inclined staff gage used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from the highway bridge or an electric railway bridge or by wading.

CHANNEL AND CONTROL.—Channel rough and subject to a growth of aquatic plants during summer months. Control free from weeds and practically permanent.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded: 5.9 feet, March 2, 1914; discharge, 2,770 second-feet. Minimum stage recorded: 1.20 feet, October 26, 1914; discharge, 5 second-feet.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Flow regulated by operation of mills above station.

ACCURACY.—Records excellent.

Discharge measurements of Ware River at Gibbs Crossing, Mass., during 1912–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1912.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
Aug. 31	G. H. Canfield	1.47	23.0	Jan. 15	R. S. Barnes	a 3.63	135
31	do	1.82	58.1	24	do	a 3.48	329
Oct. 30	J. G. Mathers	2.16	133	25	do	a 3.70	748
Nov. 13	C. S. De Golyer	2.52	242	Feb. 11	do	a 2.92	370
Dec. 17	do	2.49	238	27	do	a 3.98	237
1913.				28	C. H. Pierce	a 2.88	99.0
Jan. 4	R. S. Barnes	3.24	645	Apr. 1	do	3.62	1,030
9	C. S. De Golyer	3.00	485	2	do	3.93	1,390
Feb. 11	De Golyer and Barnes	a 3.15	409	8	R. S. Barnes	3.57	959
Mar. 12	De Golyer and Mathers	3.07	507	Aug. 18	C. H. Pierce	1.42	22.0
28	O. W. Hartwell	5.51	2,600	18	do	1.42	19.7
28	do	5.48	2,430	Dec. 4	R. S. Barnes	1.62	37.3
29	do	4.31	1,670	20	do	a 1.80	40.0
Aug. 11	C. H. Pierce	2.19	136	1915.			
12	do	1.49	15.3	Jan. 4	R. S. Barnes	a 3.85	174
Sept. 7	do	1.49	24.9	5	do	a 1.80	42.5
7	do	1.49	22.3	6	do	a 3.50	147
1914.				21	do	3.68	1,120
Jan. 3	R. S. Barnes	a 2.32	160	Feb. 5	do	2.54	233
15	do	a 3.93	169	Mar. 1	do	3.38	774

a Discharge relation affected by ice.

Daily discharge, in second-feet, of Ware River at Gibbs Crossing, Mass., for the years ending Sept. 30, 1912–1915.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.														
1	.....	16	69	76	23	690	300	672	1,340	380	325	97	81	68
2	.....	12	39	49	97	439	270	571	1,160	337	326	138	46	112
3	.....	27	44	22	175	406	295	460	935	292	278	116	24	125
4	.....	36	46	87	195	468	280	358	768	238	226	24	74	136
5	.....	37	34	56	169	373	210	303	776	292	215	21	90	112
6	.....	41	16	43	180	346	225	303	730	300	188	19	62	72
7	.....	36	28	54	187	292	195	207	693	289	147	88	68	29
8	.....	26	43	134	194	381	169	218	629	226	129	96	88	114
9	.....	43	45	185	182	471	150	214	553	236	214	112	63	109
10	.....	42	45	133	189	345	244	360	503	162	200	86	19	89
11	.....	61	51	185	155	300	240	449	412	160	194	82	68	58
12	.....	73	26	81	149	333	176	518	1,400	219	119	52	79	42
13	.....	80	15	102	133	489	172	489	1,520	248	93	20	56	37
14	.....	45	31	113	76	388	116	568	1,500	187	90	79	56	17
15	.....	16	46	147	28	326	105	1,260	1,400	189	40	90	51	51
16	.....	57	46	133	121	303	95	1,300	1,400	186	166	99	51	72
17	.....	49	44	134	121	338	112	1,050	1,200	136	133	93	23	42
18	.....	39	47	145	99	429	172	785	900	133	128	53	103	46
19	.....	39	38	145	125	407	112	642	620	209	112	38	76	64
20	94	40	19	150	154	408	90	615	605	239	115	20	46	58
21	86	40	46	105	152	375	98	744	575	164	106	52	49	21
22	78	13	45	80	145	370	142	752	498	171	34	67	48	99
23	79	79	62	54	160	326	278	613	498	204	152	59	44	118
24	64	70	109	19	136	363	285	619	461	636	144	71	17	121
25	26	49	96	106	52	358	210	653	412	705	130	63	31	128
26	139	45	74	134	172	283	188	954	372	569	103	56	42	110
27	96	46	20	148	162	328	170	1,700	320	404	96	15	46	74
28	56	33	71	58	167	275	310	2,370	386	365	76	54	42	23
29	36	13	61	156	176	273	.....	1,930	422	551	25	61	68	59
30	36	64	69	80	302	262	.....	1,540	446	613	106	77	128	41
31	38	.....	77	.....	817	238	.....	1,330	.....	468	.....	60	130	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	70	182	163	140	764	1,700	986	818	174	115	26	92
2	74	178	163	128	692	2,610	1,220	668	188	121	16	85
3	62	173	163	116	532	2,130	1,350	566	149	93	40	36
4	59	213	163	116	448	1,820	1,120	565	144	55	55	37
5	15	178	163	153	420	1,530	929	671	129	43	58	53
6	84	160	163	128	368	1,320	837	1,030	161	122	59	28
7	76	153	174	161	320	1,040	766	1,000	100	197	59	38
8	76	84	539	105	256	837	862	838	158	147	60	74
9	73	134	537	105	256	720	1,360	758	176	149	60	66
10	46	310	250	76	256	607	1,430	684	122	127	60	72
11	42	348	325	76	218	525	1,160	653	122	166	60	40
12	36	283	283	95	153	438	986	641	90	160	60	18
13	97	249	242	76	140	418	877	925	76	176	60	15
14	90	224	202	85	168	368	768	1,010	53	127	60	52
15	86	180	267	85	200	337	692	856	113	124	68	58
16	123	186	264	85	276	505	766	710	118	91	37	62
17	113	200	209	85	236	647	836	610	110	68	70	19
18	50	216	176	76	153	698	797	614	114	34	64	17
19	43	221	186	95	183	596	745	499	85	23	69	10
20	145	194	134	53	183	513	764	397	77	63	54	14
21	171	211	131	85	105	414	896	353	42	82	106	60
22	156	140	177	85	236	358	863	356	107	122	136	53
23	85	135	236	76	320	369	763	293	115	99	109	56
24	88	197	192	85	256	353	671	224	115	101	120	18
25	168	234	261	727	116	382	595	288	121	42	126	20
26	749	200	383	593	95	524	636	274	94	28	119	28
27	676	88	315	393	76	898	1,040	236	56	106	76	8.1
28	571	181	226	256	168	1,480	970	260	44	91	27	56
29	430	110	262	368	.....	1,740	914	249	129	90	28	33
30	328	190	299	448	.....	1,360	884	156	118	101	51	37
31	267	.....	217	626	.....	1,080	.....	128	.....	46	112	.....

Daily discharge, in second-feet, of Ware River at Gibbs Crossing, Mass., for the years ending Sept. 30, 1912–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	13	7.8	69	60	236	669	138	195	141	108	187	159
2	17	30	70	46	218	511	131	198	148	137	264	150
3	8.7	35	72	25	159	424	72	239	118	304	359	150
4	6.0	38	26	46	168	343	108	236	88	338	523	60
5	26	51	29	60	123	308	149	200	24	229	1,350	50
6	27	20	26	76	200	282	188	217	17	238	1,370	140
7	50	17	72	244	420	241	232	176	56	222	1,340	136
8	12	17	68	284	438	281	235	191	59	179	975	130
9	20	61	66	99	329	284	252	219	76	555	750	119
10	18	46	73	57	248	236	273	226	90	714	571	105
11	8.8	31	47	46	168	237	263	222	89	443	480	25
12	9.6	28	24	60	140	230	537	192	21	398	378	21
13	35	14	24	248	174	157	598	165	11	358	377	78
14	34	9.8	57	276	142	134	466	155	58	273	386	78
15	32	6.6	95	174	393	209	379	110	63	260	305	79
16	36	45	89	125	1,240	238	324	109	72	209	342	80
17	22	56	63	120	956	169	290	207	68	118	314	81
18	57	47	60	1,280	660	169	212	121	62	112	267	24
19	82	43	47	2,370	529	163	232	120	21	149	217	19
20	66	24	53	1,640	420	99	269	115	16	240	210	81
21	36	20	76	870	343	96	253	102	67	201	148	114
22	32	15	101	515	368	176	189	82	70	228	129	190
23	14	42	79	378	343	192	204	133	68	242	212	182
24	11	62	60	1,000	420	153	153	191	70	175	208	132
25	7.3	69	35	790	1,660	145	132	192	73	116	248	75
26	34	13	20	585	2,230	138	195	131	61	140	182	29
27	42	15	25	393	1,180	89	204	127	20	163	177	105
28	75	30	51	320	788	118	182	121	66	144	114	98
29	71	52	85	268	.....	194	173	29	80	171	139	100
30	17	85	40	200	.....	195	159	50	77	243	207	92
31	11	.....	174	153	.....	136	.....	53	.....	148	182	.....

NOTE.—Discharge determined from a well-defined rating curve by averaging the discharge for short periods throughout the day. The length of periods varies from 1 to 6 hours. Discharge relation affected by ice Feb. 5–26, 1913; Jan. 1 to Feb. 28, 1914; Dec. 16, 1914, to Jan. 18, 1915, and Feb. 1–5, 1915; estimates based on gage-height record, discharge measurements, and climatic data.

Monthly discharge of Ware River at Gibbs Crossing, Mass., for the years ending Sept. 30, 1912–1915.

[Drainage area, 201 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1912.						
August 20–31	139	26	69	0.343	0.15	A.
September	80	15	42	.209	.23	A.
1912–13.						
October	109	15	48	.239	.28	A.
November	185	19	104	.517	.58	A.
December	817	23	168	.836	.96	A.
January	690	238	367	1.83	2.11	A.
February	310	90	193	.960	1.00	C.
March	2,370	207	792	3.94	4.54	B
April	1,520	320	780	3.88	4.33	B.
May	705	133	307	1.53	1.76	A.
June	326	25	147	.731	.82	A.
July	138	15	66.4	.330	.38	A.
August	130	17	60.3	.300	.35	A.
September	136	17	74.9	.373	.42	A.
The year	2,370	15	259	1.29	17.53	
1913–14.						
October	749	15	166	.826	.95	A.
November	348	84	192	.955	1.07	A.
December	539	131	244	1.21	1.40	B.
January	727	53	185	.920	1.06	C.
February	764	76	271	1.35	1.41	C.
March	2,610	337	913	4.54	5.23	A.
April	1,430	595	916	4.56	5.09	A.
May	1,030	128	559	2.78	3.20	A.
June	188	42	113	.562	.63	A.
July	197	23	100	.498	.57	A.
August	136	16	67.9	.338	.39	B.
September	92	8.1	41.8	.208	.23	A.
The year	2,610	8.1	315	1.57	21.23	
1914–15.						
October	82	6.0	30.0	.149	.17	A.
November	85	6.6	34.3	.171	.19	A.
December	174	20	60.7	.302	.35	C.
January	2,370	25	413	2.05	2.36	C.
February	2,230	123	525	2.61	2.72	B.
March	669	89	226	1.12	1.29	A.
April	598	72	240	1.19	1.33	A.
May	239	29	156	.776	.89	A.
June	148	11	65.0	.323	.36	A.
July	714	108	244	1.21	1.40	A.
August	1,370	114	416	2.07	2.39	A.
September	190	19	96.1	.478	.53	A.
The year	2,370	6.0	207	1.03	13.98	

Days of deficiency in discharge of Ware River at Gibbs Crossing, Mass., during the years ending Sept. 30, 1913–1915.

Discharge in second-feet.	Theoretical horsepower per foot fall.	Days of deficiency in discharge.		
		1912–13	1913–14	1914–15
20	2.7	9	10	26
40	4.6	33	26	63
60	6.8	79	54	91
80	9.1	105	87	131
100	11.4	135	116	151
125	14.2	162	151	175
150	17.0	191	172	200
175	19.9	212	195	221
200	22.7	230	215	247
300	34.1	265	255	302
400	45.5	297	276	328
500	56.8	317	284	336
750	85.2	341	317	348
1,000	114	349	343	354
2,000	227	364	363	363
3,000	341	365	365	365

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

BURNSHIRT RIVER NEAR TEMPLETON, MASS.

LOCATION.—Just below Brown Pond dam, 3 miles south of the village of Templeton, and 3 miles above Williamsville.

DRAINAGE AREA.—8.4 square miles.

RECORDS AVAILABLE.—May 26 to December 31, 1909.

GAGE.—Vertical staff just below junction of spillway and tailrace.

DISCHARGE MEASUREMENTS.—Made by wading.

CHANNEL AND CONTROL.—Bed of stream composed of rocks and coarse gravel. Control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 1.4 feet, December 2, 1909; discharge 17.8 second-feet. Minimum stage recorded: 0.35 foot at various times during July, August, and September; discharge 0.85 second-foot.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Flow affected by storage in reservoir above station.

ACCURACY.—As the gage was read only once a day and the amount of regulation unknown, the record can be considered only approximate.

Discharge measurements of Burnshirt River near Templeton, Mass., during 1909.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
May 24	F. F. Henshaw	1.16	14	Dec. 1	F. F. Henshaw	[a].40	1.0
Nov. 15	do	.49	1.8	16	W. Henshaw	[a].92	6.9
27	do	.75	4.3	17	F. F. Henshaw	1.91	30
30	do	.86	6.3	18	do	1.14	11.1

[a] Discharge relation probably affected by ice.

Discharge, in second-feet, of Burnshirt River near Templeton, Mass., for 1909.

Day.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
1		13.0	2.2	1.1	0.85	7.8	2.2	0.85
2		11.9	1.8	1.1	.85	6.8	2.2	17.8
3		11.9	1.1	1.1	.85	6.0	2.7	4.5
4		10.8	1.1	3.8	.85	5.2	2.7	4.5
5		9.8	1.1	2.7	.85	4.5	2.7	4.5
6		9.8	1.8	1.8	.85	3.8	2.7	3.8
7		8.7	2.2	1.4	1.1	3.2	2.7	3.8
8		7.8	1.8	1.1	.85	2.7	2.2	4.5
9		7.8	1.8	1.1	.85	2.2	1.8	4.5
10		7.2	1.1	1.1	.85	2.2	1.4	4.5
11		7.8	.85	1.1	.85	3.8	1.8	4.5
12		7.8	.85	.85	.85	3.2	1.8	3.8
13		6.8	.85	.85	.85	2.7	1.8	2.7
14		6.8	.85	1.1	.85	2.7	1.8	3.8
15		6.0	.85	1.1	.85	2.2	1.8	5.2
16		5.2	.85	1.1	1.2	2.2	1.8	6.8
17		4.5	2.7	1.1	.85	2.2	2.2	7.8
18		6.0	2.7	1.1	.85	1.8	2.2	11.9
19		5.2	2.2	1.1	.85	2.2	2.7	3.8
20		5.2	1.8	.85	.85	2.2	2.7	4.5
21		4.9	1.8	.85	.85	2.2	2.7	3.8
22		4.5	1.4	.85	1.7	2.7	2.2	3.8
23		3.8	1.1	.85	.85	3.2	2.7	2.7
24		3.8	.85	1.0	.85	3.8	2.7	2.2
25		2.9	.85	.85	.85	3.8	3.8	2.2
26	8.7	3.2	.85	.85	1.1	3.2	3.2	2.0
27	11.9	3.2	.85	1.0	2.2	3.2	3.8	1.8
28	14.2	2.7	1.1	.85	3.8	3.2	4.5	1.8
29	4.5	2.2	2.2	.85	7.8	3.2	6.8	1.8
30	15.4	2.2	1.1	.85	11.9	2.7	6.8	1.4
31	14.2		1.1	.85		1.8		1.4

NOTE.—Discharge based on a rating curve which is well defined below discharge 30 second-feet, and represents the flow at time gage was read. No correction made for possible ice effect during December.

Monthly discharge of Burnshirt River near Templeton, Mass., during 1909.

[Drainage area, 8.4 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
May 26–31	15.4	4.5	11.5	1.37	0.31
June	13.0	2.2	6.45	.768	.86
July	2.7	.85	1.41	.168	.19
August	3.8	.85	1.17	1.39	.16
September	11.9	.85	1.65	.196	.22
October	7.8	1.8	3.31	.394	.45
November	6.8	1.4	2.77	.330	.37
December	17.8	.85	4.29	.511	.59

NOTE.—Monthly records considered only approximate.

SWIFT RIVER AT WEST WARE, MASS.

LOCATION.—Just below the timber dam (Pl. VIII, *B*) opposite the West Ware station of the Boston & Albany Railroad, about 6 miles downstream from Enfield.

DRAINAGE AREA.—186[1] square miles.

RECORDS AVAILABLE.—July 15, 1910, to September 30, 1915.

[1] Remeasured since published in previous reports.

GAGES.—Chain gage attached to downstream side of footbridge about 400 feet below the dam used July 15, 1910, to August 25, 1912; Barrett & Lawrence water-stage recorder on left bank about 1,000 feet below dam, August 25, 1912, to September 30, 1915. Automatic gage is referred to gage datum by a hook gage inside the well, and an inclined staff is used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from cable about 50 feet above automatic gage or by wading.

CHANNEL AND CONTROL.—Bed of gravel and alluvial deposits, some aquatic vegetation during summer months. Control at ordinary stages is practically permanent; at high stages control is probably the dam at Bondsville.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 9.1 feet, February 26, 1915; approximate discharge, determined from an extension of the rating curve, 2,240 second-feet. Minimum stage recorded: 1.36 feet, September 22, 1914; discharge, 22 second-feet.

WINTER FLOW.—Discharge relation not seriously affected by ice.

REGULATION.—Operation of mills at Enfield 6 miles above station affects distribution of flow at low and medium stages, but has only a slight effect when the mean daily discharge is over 200 second-feet. The diurnal fluctuation is somewhat equalized however, by the pondage above the dam at West Ware, which has not been used for power for several years. (See Water-Supply Paper 375, p. 132.)

ACCURACY.—Rating curves well defined and records of discharge as published considered good. On account of the marked diurnal fluctuation, mean daily and monthly discharge could not be computed for period prior to installation of automatic water-stage recorder. (See fig. 2.)

Discharge measurements of Swift River at West Ware, Mass., during 1910–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1910.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
July 15	T. W. Norcross	2.82	102	Feb. 12	C. S. De Golyer	2.58	191
15	H. B. Alvord	2.70	70.4	Mar. 12	J. G. Mathers	3.66	465
Sept. 9	W. G. Hoyt	3.17	145	12	C. S. De Golyer	3.66	465
1911.				27	O. W. Hartwell	5.53	987
Mar. 9	C. S. De Golyer	3.21	131	27	....do	5.62	1,010
1912.				Aug. 11	C. H. Pierce	1.47	33.8
Feb. 10	G. H. Canfield	[a] 3.41	138	1914.			
Apr. 24	C. S. De Golyer	4.98	676	Jan. 3	R. S. Barnes	2.40	150
Aug. 23	G. H. Canfield	1.53	31.5	15	....do	[a] 2.10	82.9
30	....do	1.48	30.9	24	....do	[a] 2.10	61.1
30	....do	2.02	85.2	Feb. 11	....do	[a] 2.99	209
30	....do	1.87	70.3	27	C. H. Pierce	[a] 2.57	152
Oct. 31	J. G. Mathers	2.04	125	Aug. 17	....do	1.76	63.0
31	....do	2.08	121	17	....do	1.80	65.0
Nov. 18	C. S. De Golyer	2.50	172	Dec. 4	R. S. Barnes	1.80	66.0
29	....do	2.24	151	20	....do	1.83	59.6
Dec. 18	....do	2.26	145	1915.			
18	....do	2.22	133	Jan. 5	R. S. Barnes	[a] 1.90	59.0
1913.				Feb. 5	....do	[a] 2.53	145
Jan. 8	C. S. De Golyer	3.46	420	Apr. 14	....do	4.69	791
8	....do	3.44	394	14	....do	4.68	788
				Sept. 30	Hardin Thweatt	2.05	106

[a] Discharge relation affected by ice.

NOTE.—Gage height, October 31 to December 18, 1912, somewhat uncertain on account of defective hook gage. Gage heights since August 23, 1912, refer to the hook gage.

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910–1912.

Day.	July.				August.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910								
1					7.00	44	8.15	105
2					6.45	48	7.25	116
3					7.00	48	6.15	92
4					6.45	48	6.15	95
5					7.00	57	7.00	122
6					7.00	57	7.30	82
7					11.55	105		
8					6.45	108	5.45	142
9					6.45	82	6.45	137
10					6.45	69	6.00	131
11					6.45	78	5.45	122
12					6.30	69	7.30	131
13					7.30	57	7.15	112
14					11.45	57		
15			6.35	95	6.45	78	6.00	131
16	6.55	44	5.15	82	6.55	59	5.45	131
17	11.15	48			6.45	50	6.25	134
18	7.00	35	6.15	86	6.35	50	5.30	122
19	7.00	48	7.30	95	7.15	61	6.45	147
20	7.00	44	7.30	82	6.55	57	6.00	102
21	6.45	41	7.45	80	11.45	44		
22	7.00	41	5.40	80	7.00	57	6.40	126
23	6.45	42	7.00	48	7.00	50	7.00	122
24			1.15	42	6.35	59	6.45	105
25	6.30	38	6.45	105	6.45	50	5.45	102
26	6.55	42	6.30	90	7.00	48	6.30	90
27	7.00	42	6.45	74	6.45	46	5.20	57
28	7.00	44	6.30	71	11.55	42		
29	7.00	42	6.45	69	6.55	42	6.15	122
30	6.55	41	7.10	61	6.35	42	7.00	116
31	11.45	44			6.30	41	7.10	105

Day.	September.				October.			
1	6.35	41	5.00	95	7.00	42	6.00	74
2	7.00	38	6.15	105			12.00	50
3	6.45	35	6.15	57	7.30	42	6.00	50
4			12.15	46	7.00	38	5.30	102
5	7.00	54	5.30	74	7.30	41	6.00	80
6	7.00	74	6.00	166	7.30	44	5.30	82
7	7.00	71	6.00	137	7.30	44	5.30	82
8	6.45	61	6.45	142	7.15	44	5.30	50
9	7.00	78	6.00	159			1.30	30
10	7.00	78	5.55	134	7.30	67	6.00	116
11			1.30	86	7.30	59	5.30	108
12	7.00	92	7.00	137	7.30	35	6.55	74
13	6.45	59	6.10	137	7.30	35	5.30	105
14	6.50	57	6.00	150	7.15	35	5.30	102
15	7.00	54	5.30	126	7.15	35	5.30	64
16	7.00	50	6.10	131	11.00	38		
17	7.00	46	6.30	50	7.30	36	5.50	108
18			1.30	46	7.15	36	5.45	105
19	7.00	46	6.00	134	7.15	35	5.45	98
20	7.00	50	5.30	116	7.30	36	5.30	105
21	7.00	41	5.30	102	7.15	36	5.30	105
22	7.00	41	6.00	116	7.15	35	5.30	102
23	7.00	38	6.10	92			1.15	35
24	7.00	38	6.00	64	7.15	35	5.30	105
25			12.10	38	7.15	44	5.30	105
26	7.15	42	6.15	126	7.00	48	5.40	112
27	7.15	46	6.05	32	7.15	42	5.20	69
28	7.15	18	6.00	50	7.15	42	5.00	86
29	7.00	48	6.00	92	7.15	38	5.00	74
30	7.15	42	6.15	80			12.30	35
31					7.30	35	5.00	74

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910–1912—Contd.

Day.	November.				December.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	7.30	42	5.00	74	7.30	59	4.30	150
2	7.30	42	5.30	80	7.30	61	4.30	126
3	7.30	52	5.00	122	7.30	59	4.30	102
4	7.30	48	5.30	150	11.30	64	.....	.....
5	7.30	80	5.30	131	7.45	69	4.30	142
6	.....	.....	1.30	112	7.45	69	4.30	116
7	7.30	122	5.00	168	7.45	69	4.30	116
8	7.30	122	5.00	168	7.45	54	4.30	122
9	7.30	105	5.00	150	7.45	50	4.30	122
10	7.30	112	5.00	150	7.45	54	4.30	122
11	7.30	105	5.00	154	.....	.....	1.15	48
12	7.30	105	5.00	150	7.45	54	4.30	105
13	11.15	108	.....	.....	7.45	54	4.30	122
14	7.30	92	5.00	112	7.45	46	4.30	92
15	7.30	61	5.00	105	7.45	44	4.30	95
16	7.30	59	5.00	150	7.45	59	5.00	92
17	7.30	59	5.00	116	7.45	57	5.00	74
18	7.30	50	5.00	126	.....	.....	1.30	44
19	7.30	52	5.00	92	7.45	50	5.00	126
20	.....	.....	1.30	92	7.45	46	4.30	98
21	7.30	67	5.00	131	7.45	46	4.30	108
22	7.30	59	4.45	116	7.45	59	5.00	102
23	7.30	86	4.00	108	7.45	59	5.00	102
24	7.30	52	4.30	52	7.45	71	5.00	303
25	7.30	67	4.30	69	11.30	150	.....	.....
26	7.30	59	4.30	67	7.45	154	4.45	172
27	11.30	52	.....	.....	7.45	208	4.30	212
28	7.30	59	4.00	137	7.45	208	4.30	198
29	7.30	59	4.30	134	7.45	187	4.30	187
30	7.30	59	4.30	150	7.45	198	4.30	187
31	.....	.....	.....	.....	7.30	172	4.30	187

Day.	January.				February.			
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	11.15	178	.....	.....	7.45	230	5.00	208
2	7.45	178	4.30	208	7.45	230	5.00	142
3	7.45	230	4.30	277	7.45	154	5.00	150
4	7.45	344	4.30	373	7.45	122	5.00	168
5	7.45	427	4.30	373	.....	.....	1.30	168
6	7.45	420	4.30	336	7.45	137	5.00	154
7	7.35	277	4.30	258	7.45	137	5.00	154
8	11.30	208	.....	.....	7.45	134	5.00	159
9	7.45	208	4.30	198	7.45	126	5.00	183
10	7.45	172	4.30	208	7.45	116	5.00	168
11	7.45	172	4.30	198	7.45	126	5.00	168
12	7.45	178	4.30	178	.....	.....	1.30	116
13	7.45	172	4.30	178	7.45	116	5.00	168
14	7.45	168	4.30	134	7.45	92	5.00	168
15	11.00	154	.....	.....	7.45	95	5.00	159
16	7.45	95	4.30	159	7.45	95	5.00	168
17	7.45	159	5.00	168	7.45	98	5.00	168
18	7.45	134	5.00	172	7.45	82	5.00	137
19	7.45	105	5.00	159	.....	.....	1.30	105
20	7.45	80	5.00	122	7.45	95	5.00	168
21	7.45	98	5.00	95	7.45	92	5.00	142
22	11.00	105	.....	.....	7.45	159	5.00	126
23	7.45	98	5.00	142	7.45	86	5.00	134
24	7.45	61	5.00	122	7.45	80	5.00	80
25	7.45	59	5.00	142	7.45	102	5.00	102
26	7.45	59	5.00	122	11.45	105	.....	.....
27	7.45	52	5.00	134	7.30	122	4.30	325
28	7.45	187	5.00	219	7.30	208	4.30	198
29	11.30	230	.....	.....	.....	.....	.....	.....
30	7.45	242	5.00	230	.....	.....	.....	.....
31	7.45	198	5.00	230	.....	.....	.....	.....

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910–1912—Contd.

Day.	March.				April.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	7.30	187	4.30	187	7.30	1,040	6.00	877
2	7.30	191	4.30	191	11.45	682	.....	.....
3	7.30	168	4.30	168	7.30	509	5.00	445
4	7.30	150	4.30	168	7.30	420	5.00	358
5	11.45	137	.....	.....	7.30	344	5.00	336
6	7.30	105	4.30	116	7.30	358	5.00	528
7	7.30	80	5.00	168	7.30	628	5.00	777
8	7.30	80	5.00	150	7.30	915	5.00	868
9	7.30	80	5.00	154	.....	.....	1.15	786
10	7.30	86	5.00	116	7.30	640	5.00	607
11	7.30	112	5.00	164	7.30	607	5.00	567
12	.....	.....	1.30	134	7.30	528	5.00	497
13	7.30	108	5.00	191	7.30	490	5.00	454
14	7.30	122	5.00	187	7.00	420	6.00	420
15	7.30	420	5.00	628	7.30	490	6.00	528
16	7.30	682	6.00	733	.....	.....	1.15	547
17	7.30	528	5.00	587	7.30	509	5.00	509
18	7.30	490	6.00	388	7.30	509	6.00	454
19	11.45	567	.....	.....	7.30	394	6.00	373
20	7.00	258	5.00	388	7.30	388	5.30	373
21	7.30	277	5.00	325	7.30	344	6.00	336
22	7.30	303	5.00	317	7.30	358	6.00	344
23	7.30	358	5.00	364	.....	.....	1.30	325
24	7.30	344	6.00	358	7.00	303	5.00	316
25	7.30	325	5.00	336	7.30	316	5.00	316
26	11.15	303	.....	.....	7.30	282	6.00	290
27	7.30	290	5.00	420	7.30	303	6.00	277
28	7.30	938	5.00	1,350	7.30	277	6.00	282
29	7.30	1,350	5.00	1,240	7.30	277	6.00	265
30	7.30	1,260	5.00	1,270	11.30	277	.....	.....
31	7.30	1,380	5.00	1,290	.....	.....	.....	.....
	May.				June.			
1	7.30	253	6.00	265	7.00	187	6.00	208
2	7.30	277	6.00	282	7.00	126	6.00	134
3	7.30	290	5.00	290	7.00	126	6.00	122
4	7.30	277	6.00	265	11.00	150	.....	.....
5	7.30	265	6.00	265	7.00	134	6.00	177
6	7.30	230	6.00	230	7.00	150	6.00	187
7	11.00	235	.....	.....	7.00	112	6.00	187
8	7.30	208	6.00	208	7.00	105	6.00	105
9	7.00	219	6.00	230	7.00	92	6.00	105
10	7.30	219	6.00	212	7.30	126	6.00	112
11	7.30	191	6.00	198	11.00	150	.....	.....
12	7.30	208	6.00	208	7.00	150	6.00	168
13	7.00	187	6.00	187	7.30	92	6.00	198
14	11.00	191	.....	.....	7.00	108	6.00	191
15	7.30	164	6.00	168	7.00	105	6.00	191
16	7.00	168	6.00	168	7.00	112	6.00	168
17	7.00	150	6.00	168	7.00	116	6.00	150
18	7.00	150	6.00	150	11.45	122	.....	.....
19	7.00	150	6.00	172	7.00	108	6.00	154
20	7.00	198	6.00	242	7.00	82	6.00	168
21	11.00	265	.....	.....	7.00	82	6.00	134
22	7.00	253	6.00	253	7.00	74	6.00	147
23	7.30	253	6.00	230	7.00	74	6.00	142
24	7.30	219	6.00	226	7.00	74	6.00	105
25	7.00	208	6.00	212	11.00	74	.....	.....
26	7.00	208	6.00	198	7.00	69	6.00	134
27	7.00	198	6.00	187	7.00	69	6.00	134
28	.....	.....	1.30	183	7.00	69	6.00	122
29	7.00	159	6.00	187	7.00	64	6.00	126
30	7.00	134	6.00	142	7.00	64	6.00	126
31	7.00	142	6.00	187	.....	.....	.....	.....

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910–1912—Contd.

Day.	July.				August.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	7.00	61	6.00	122	6.30	74	6.30	80
2	11.00	61	.....	.....	7.30	69	6.30	80
3	7.00	59	6.00	122	7.30	61	5.30	134
4	7.00	59	6.00	67	7.30	54	6.00	80
5	7.00	64	6.00	122	7.30	50	6.00	80
6	7.00	59	6.00	122	11.00	50	.....	.....
7	7.00	59	6.00	126	7.30	86	6.30	134
8	7.00	61	6.00	122	7.30	54	6.30	105
9	11.00	59	.....	.....	7.30	54	6.00	116
10	6.00	50	6.00	69	7.30	50	6.30	105
11	6.00	54	6.00	80	7.30	50	6.30	92
12	6.00	54	6.00	80	7.30	54	6.30	92
13	6.00	50	6.00	80	11.00	54	.....	.....
14	6.45	50	6.00	74	7.30	54	6.30	126
15	7.00	50	6.00	69	7.30	52	6.30	134
16	.....	.....	1.30	48	7.30	92	6.00	150
17	6.30	46	6.30	69	7.00	69	6.30	147
18	7.00	50	6.30	92	7.30	71	6.30	126
19	7.00	50	6.30	92	7.30	98	6.00	80
20	7.30	46	6.30	95	.....	.....	1.30	86
21	7.30	50	6.30	92	7.30	86	6.30	134
22	7.00	48	6.30	92	7.30	69	6.00	150
23	11.30	50	.....	.....	7.00	59	6.30	134
24	7.00	48	6.30	122	7.30	59	6.30	142
25	7.00	69	6.30	142	7.30	59	6.30	142
26	7.00	64	6.30	142	7.30	59	6.00	69
27	7.00	64	6.30	142	11.45	71	.....	.....
28	7.00	64	6.30	105	7.30	86	6.30	92
29	7.30	116	5.30	112	7.30	105	6.00	198
30	11.00	112	.....	.....	7.30	134	6.30	218
31	7.30	116	6.30	92	7.30	218	6.30	265

Day.	September.				October.			
1	7.30	277	6.00	277	.....	.....	1.30	116
2	7.30	253	6.00	248	7.30	134	6.00	168
3	11.45	230	.....	.....	7.30	142	5.30	208
4	7.30	198	6.00	154	7.30	142	5.30	244
5	7.30	154	6.00	142	7.30	187	5.30	230
6	7.30	150	6.30	172	7.30	198	5.00	198
7	7.00	116	6.30	126	7.30	208	5.00	219
8	7.30	105	6.00	178	10.30	219	.....	.....
9	7.30	95	6.00	178	7.30	219	5.00	244
10	11.00	137	.....	.....	7.30	219	5.00	208
11	7.30	122	6.00	187	7.30	172	5.00	208
12	7.00	92	6.00	187	7.30	168	5.00	187
13	7.00	92	6.30	126	7.30	137	5.00	142
14	7.30	86	6.00	168	7.30	137	5.00	142
15	7.30	92	6.00	122	11.00	134	.....	.....
16	7.30	112	6.00	95	7.30	126	6.00	178
17	11.00	116	.....	.....	7.30	98	5.30	187
18	7.30	92	6.00	116	7.30	92	5.00	230
19	7.30	86	6.00	137	7.30	699	5.00	822
20	7.30	92	6.00	168	7.30	1,260	5.00	1,260
21	7.30	92	6.00	142	7.30	1,110	5.00	1,010
22	7.30	80	6.00	122	11.00	1,150	.....	.....
23	7.30	82	6.00	134	7.30	1,240	5.00	1,320
24	11.30	92	.....	.....	7.30	1,240	5.00	1,210
25	7.00	90	6.00	142	7.30	1,010	5.00	1,010
26	7.30	74	6.00	142	7.30	786	5.00	733
27	7.30	69	6.00	150	7.30	669	5.00	607
28	7.30	86	6.00	134	7.30	548	5.00	548
29	7.30	69	6.00	150	11.00	454	.....	.....
30	7.30	71	6.00	150	7.30	388	5.00	373
31	.....	.....	.....	.....	7.30	358	5.00	358

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910–1912—Contd.

Day.	November.				December.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	7.30	344	5.00	358	7.30	454	5.00	454
2	7.30	344	5.00	358	7.30	454	5.00	454
3	7.30	325	5.00	344	11.00	388	.....	.....
4	7.30	336	5.00	344	7.30	358	5.00	358
5	11.00	290	.....	.....	7.30	358	5.00	358
6	7.30	265	5.00	303	7.30	358	5.00	344
7	7.30	325	5.00	344	7.30	316	5.00	316
8	7.30	388	5.00	388	7.30	290	5.00	290
9	7.30	358	5.00	388	7.30	290	5.00	290
10	7.30	358	5.00	358	11.00	290	.....	.....
11	7.30	344	5.00	358	7.30	265	4.00	277
12	.....	.....	1.30	344	7.30	303	4.00	316
13	7.30	358	5.00	358	7.30	303	4.00	303
14	7.30	364	5.00	358	7.30	303	4.00	303
15	7.30	420	5.00	437	7.30	303	4.00	336
16	7.30	454	5.00	461	7.30	344	4.00	358
17	7.30	472	5.00	472	11.30	454	.....	.....
18	7.30	498	5.00	528	7.30	528	4.00	548
19	11.00	648	.....	.....	7.30	567	4.00	528
20	7.30	712	5.00	712	7.30	454	4.00	454
21	7.30	712	5.00	712	7.30	420	4.00	420
22	7.30	648	5.00	682	7.30	373	4.00	373
23	7.30	567	5.00	548	7.30	548	4.00	567
24	7.30	509	5.00	567	10.30	712	.....	.....
25	7.30	628	5.00	628	7.30	733	4.00	733
26	11.00	607	.....	.....	7.30	712	4.00	733
27	7.30	607	5.00	607	7.30	648	4.00	690
28	7.30	587	5.00	587	7.30	615	4.00	628
29	7.30	567	5.00	567	7.30	528	4.00	528
30	7.30	490	5.00	490	7.30	548	4.00	548
31	.....	.....	.....	.....	11.30	420	.....	.....
1912.	March.				April.			
1	.....	.....	.....	.....	7.30	1,690	5.00	1,570
2	.....	.....	.....	.....	7.30	1,430	5.00	1,510
3	.....	.....	.....	.....	7.30	1,690	5.00	1,810
4	.....	.....	.....	.....	7.30	1,930	5.00	1,810
5	.....	.....	.....	.....	7.30	1,620	5.00	1,510
6	.....	.....	.....	.....	7.30	1,390	5.00	1,390
7	.....	.....	.....	.....	.....	.....	1.30	1,120
8	.....	.....	.....	.....	7.30	1,170	5.00	1,330
9	.....	.....	.....	.....	7.30	1,330	5.00	1,310
10	.....	.....	.....	.....	7.30	1,220	5.00	1,120
11	.....	.....	.....	.....	7.30	1,020	5.00	1,010
12	.....	.....	.....	.....	7.30	924	5.00	831
13	.....	.....	.....	.....	7.30	986	5.00	742
14	.....	.....	.....	.....	11.00	699	.....	.....
15	.....	.....	.....	.....	7.30	656	5.00	656
16	.....	.....	.....	.....	7.30	699	5.00	699
17	.....	.....	.....	.....	7.30	786	5.00	786
18	.....	.....	5.00	2,390	7.30	813	5.00	831
19	7.30	1,880	5.00	1,690	7.30	924	5.00	972
20	7.30	1,510	5.00	1,390	7.30	877	5.00	877
21	7.30	1,270	5.00	1,170	11.00	786	.....	.....
22	7.30	972	5.00	953	7.30	724	5.00	699
23	7.30	813	5.00	742	7.30	724	5.00	699
24	11.00	656	.....	.....	7.30	699	5.00	656
25	7.30	607	5.00	536	7.30	607	5.00	607
26	7.30	498	5.00	536	7.30	575	5.00	575
27	7.30	498	5.00	536	7.30	498	5.00	498
28	7.30	498	5.00	575	11.00	447	.....	.....
29	7.30	628	5.00	1,200	7.30	427	5.00	427
30	7.30	1,390	5.00	1,750	7.30	461	5.00	461
31	11.00	2,000	.....	.....	.....	.....	.....	.....

Discharge, in second-feet, of Swift River at West Ware, Mass., for 1910-1912—Contd.

Day.	May.				June.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	7.30	498	5.00	472	6.00	483	6.00	498
2	7.30	461	6.00	461	11.00	498	.....	.....
3	7.30	461	6.00	461	6.00	461	6.00	427
4	7.30	414	6.00	394	6.00	382	6.00	364
5	11.00	336	.....	.....	6.00	352	6.00	325
6	7.00	336	6.00	336	6.00	298	6.00	308
7	7.00	394	6.00	394	6.00	298	6.00	298
8	7.00	427	6.00	447	6.00	258	6.00	248
9	7.00	461	6.00	575	11.00	226	.....	.....
10	7.00	607	6.00	575	6.00	212	6.00	212
11	7.00	575	6.00	575	6.00	212	6.00	191
12	11.00	559	.....	.....	6.00	191	6.00	191
13	7.00	559	6.00	536	6.00	172	6.00	172
14	7.00	536	6.00	536	6.00	168	6.00	168
15	7.00	536	6.00	536	6.00	164	6.00	164
16	7.00	575	6.00	607	11.00	154	.....	.....
17	7.00	742	6.00	786	6.00	147	6.00	154
18	7.00	1,070	6.00	972	6.00	102	6.00	164
19	11.00	877	.....	.....	6.00	102	6.00	154
20	7.00	786	6.00	699	6.00	108	6.00	78
21	6.00	640	6.00	640	6.00	46	6.00	32
22	6.00	656	6.00	599	6.00	116	6.00	112
23	6.00	599	6.00	575	11.00	116	.....	.....
24	6.00	548	6.00	640	6.00	108	6.00	102
25	6.00	699	6.00	575	6.00	90	6.00	82
26	11.00	483	.....	.....	6.00	78	6.00	78
27	6.00	427	6.00	427	6.00	75	6.00	137
28	6.00	394	6.00	364	6.00	71	6.00	131
29	6.00	352	6.00	344	6.00	59	6.00	90
30	6.00	336	6.00	364	11.00	61	.....	.....
31	6.00	437	6.00	461	.....	.....	.....	.....
	July.				August.			
1	6.00	71	6.00	126	6.00	36	6.00	92
2	6.00	57	6.00	122	6.00	36	6.00	116
3	6.00	57	6.00	116	6.00	41	6.00	48
4	6.00	52	6.00	108	11.00	36	.....	.....
5	6.00	48	6.00	98	6.00	52	6.00	52
6	6.00	61	6.00	82	6.00	41	6.00	108
7	11.00	57	.....	.....	6.00	41	6.00	102
8	6.00	52	6.00	108	6.00	38	6.00	92
9	6.00	52	6.00	98	6.00	36	6.00	108
10	6.00	48	6.00	92	6.00	36	6.00	108
11	6.00	46	6.00	82	11.00	41	.....	.....
12	6.00	48	6.00	90	7.00	44	6.00	122
13	6.00	41	6.00	82	7.00	44	6.00	108
14	11.00	44	.....	.....	7.00	36	6.00	92
15	6.00	48	6.00	137	7.00	36	6.00	71
16	6.00	61	6.00	98	7.00	34	6.00	71
17	6.00	46	6.00	108	7.00	28	6.00	71
18	6.00	41	6.00	122	.....	.....	1.30	41
19	6.00	44	6.00	82	7.00	36	6.00	137
20	6.00	41	6.00	71	7.00	48	6.00	122
21	11.00	71	.....	.....	7.00	41	6.00	102
22	6.00	74	6.00	122	6.00	36	6.00	122
23	6.00	64	6.00	98	6.00	32	6.00	108
24	6.00	57	6.00	92	6.00	34	6.00	80
25	6.00	64	6.00	137	11.00	41	.....	.....
26	6.00	52	6.00	137	6.00	35	6.00	105
27	6.00	46	6.00	108	7.00	36	6.00	116
28	11.00	71	.....	.....	7.00	26	6.00	74
29	6.00	52	6.00	116	7.00	26	6.00	74
30	6.00	48	6.00	147	7.00	26	6.00	74
31	6.00	38	6.00	122	7.00	26	6.00	74

NOTE.—Discharge determined from a fairly well defined rating curve, referred to the chain gage. Discharge relation affected by ice Jan. 1 to Mar. 17, 1912.

Daily discharge, in second-feet, of Swift River at West Ware, Mass., for the years ending Sept. 30, 1912–1915.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.														
1	.....	.....	64	58	79	459	260	477	990	389	512	86	48	66
2	.....	.....	61	59	104	440	278	503	913	357	406	84	46	74
3	.....	.....	56	38	110	417	256	484	799	330	342	81	40	76
4	.....	67	54	80	117	435	268	435	698	305	291	35	45	63
5	.....	.....	48	64	120	411	237	379	651	269	263	50	43	76
6	.....	.....	24	66	142	359	239	321	642	267	228	60	44	72
7	.....	.....	58	64	162	323	229	300	607	295	197	80	45	50
8	.....	.....	54	101	163	373	214	301	572	252	182	74	49	84
9	.....	.....	36	184	159	456	183	271	529	232	158	66	40	73
10	.....	.....	48	188	135	409	165	295	487	218	155	60	31	69
11	.....	.....	47	153	132	407	176	384	508	207	152	59	43	62
12	.....	.....	46	149	122	401	160	440	800	181	149	50	43	59
13	.....	.....	24	131	105	422	184	452	1,040	186	137	43	40	50
14	.....	.....	45	130	93	408	162	516	1,090	185	126	60	38	34
15	.....	26	77	135	79	368	153	656	1,010	181	104	62	38	62
16	.....	55	60	140	105	330	142	863	875	199	122	52	38	61
17	.....	61	52	145	87	318	138	888	756	199	107	55	29	56
18	.....	66	51	140	88	369	119	765	643	172	104	57	41	56
19	.....	62	44	121	103	414	131	634	572	160	97	47	42	54
20	.....	62	24	112	139	422	143	554	520	161	107	35	49	49
21	.....	51	58	106	146	417	150	579	475	159	102	55	42	34
22	.....	32	55	97	126	395	190	634	454	172	82	59	40	61
23	.....	68	48	84	133	371	284	626	425	250	105	55	41	72
24	.....	62	64	82	119	372	309	591	398	645	103	58	24	63
25	37	57	69	105	124	377	315	599	394	588	104	57	46	53
26	73	55	63	104	115	346	273	700	361	580	97	56	42	50
27	68	54	41	112	116	332	239	1,020	323	496	95	50	32	51
28	57	35	84	83	143	311	358	1,660	325	416	80	56	37	28
29	53	55	71	95	147	279	.....	1,820	399	502	65	54	44	43
30	52	67	53	92	224	258	.....	1,470	396	455	97	53	79	30
31	44	.....	59	.....	378	241	.....	1,150	.....	445	.....	51	51	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	45	176	156	152	605	385	980	695	210	107	45	86
2	55	150	164	133	620	893	1,010	639	202	127	45	85
3	60	127	168	152	519	1,190	1,160	558	196	125	40	78
4	55	116	164	152	441	1,340	1,100	518	196	113	40	66
5	45	109	154	133	402	1,280	951	558	206	107	40	100
6	95	102	144	124	340	1,100	807	723	202	115	40	78
7	95	100	150	124	315	864	751	807	202	125	40	68
8	85	88	255	124	265	667	779	779	198	125	40	58
9	76	117	328	124	265	531	1,040	695	182	125	40	55
10	52	152	325	124	228	450	1,310	639	164	121	40	55
11	52	176	287	108	193	396	1,190	572	145	113	40	53
12	25	186	240	100	162	359	1,010	558	139	145	40	40
13	47	172	209	93	152	333	864	695	137	147	40	34
14	62	156	193	93	116	302	751	807	127	149	40	48
15	64	146	172	93	142	310	681	807	120	143	40	48
16	58	140	164	86	142	359	695	723	117	143	45	60
17	51	133	168	86	142	464	723	612	113	152	65	57
18	41	131	160	79	142	531	723	544	110	154	64	54
19	23	126	152	73	133	544	751	490	120	137	67	51
20	82	134	131	73	142	490	723	450	143	104	78	48
21	119	138	129	67	142	412	779	418	132	89	112	45
22	114	126	133	67	142	377	864	391	123	85	158	33
23	111	122	127	61	142	330	779	361	107	81	184	34
24	112	133	188	61	152	333	695	335	115	79	188	38
25	193	117	260	228	152	333	612	310	118	77	166	40
26	328	109	300	193	152	418	626	294	104	76	145	41
27	431	93	292	204	152	626	807	284	81	80	125	32
28	436	97	235	252	152	1,040	835	297	100	80	109	37
29	365	124	223	252	.....	1,490	807	280	100	80	104	32
30	285	142	186	302	.....	1,460	751	253	100	80	104	36
31	218	.....	174	441	.....	1,190	.....	230	.....	80	94	.....

Daily discharge, in second-feet, of Swift River at West Ware, Mass., for the years ending Sept. 30, 1912–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914–15.												
1	34	38	59	47	143	895	156	389	101	136	376	180
2	37	40	66	44	152	655	145	461	109	172	475	166
3	35	41	67	36	150	520	132	420	109	280	640	154
4	30	46	67	47	139	368	134	389	102	355	728	145
5	38	52	67	54	136	342	150	342	95	360	1,610	141
6	30	48	65	40	158	304	200	312	88	322	1,800	130
7	34	46	64	359	241	292	239	282	74	335	1,760	121
8	35	46	66	297	277	267	245	275	72	270	1,360	121
9	34	53	67	325	270	267	255	275	78	565	1,020	121
10	34	48	64	262	239	255	262	270	76	925	795	113
11	31	45	64	176	217	243	317	257	68	848	610	106
12	35	45	58	182	176	239	565	228	66	672	490	102
13	32	44	58	272	145	217	865	208	62	535	444	98
14	32	46	76	255	134	204	795	188	59	397	447	95
15	33	44	62	225	210	184	655	172	56	320	417	100
16	38	74	60	194	550	196	505	152	64	277	391	98
17	55	81	60	180	655	187	404	149	71	215	347	113
18	56	72	55	565	595	177	368	164	74	194	307	94
19	59	70	53	985	505	168	335	164	72	188	267	88
20	51	79	58	1,180	404	160	320	156	78	221	241	84
21	47	72	53	895	356	143	297	145	78	267	215	121
22	45	65	53	565	330	147	277	166	81	280	213	150
23	43	60	61	434	325	166	260	174	86	272	241	139
24	43	56	61	434	399	164	245	176	86	267	243	139
25	42	64	45	407	1,490	162	234	184	77	272	260	136
26	55	65	46	407	2,200	174	221	172	81	248	234	130
27	48	67	46	342	1,800	162	230	162	79	248	213	125
28	43	73	43	287	1,270	150	230	147	72	282	198	117
29	44	67	42	232	.....	143	225	128	71	368	188	109
30	45	62	46	215	.....	162	239	118	71	391	186	95
31	46	.....	48	170	.....	160	.....	106	.....	391	188	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge relation affected by ice as follows: Jan. 2 to Feb. 28, 1914, Dec. 16, 1914, to Jan. 20, 1915, and Jan. 30 to Feb. 24, 1915. Discharge Jan. 2, to Feb. 28, 1914, Dec. 16, 1914, to Jan. 20, 1915, and Jan. 30 to Feb. 24, 1915, based on gage-height record, discharge measurements, and climatic data. Discharge Feb. 1, 19, and 28, May 23, 24, and 29–31, July 3, 5, and 24–31, Aug. 1–7, and Sept. 30 to Oct. 8, 1913; June 28–30, and July 27 to Aug. 16, 1914, estimated by comparison with records of streams in adjacent drainage basins.

Monthly discharge of Swift River at West Ware, Mass., for the years ending Sept. 30, 1912–1915.

[Drainage area, 186 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1912–13.						
October	84	24	53.0	0.285	0.33	B.
November	188	38	107	.575	.64	B.
December	378	79	133	.715	.82	A.
January	459	241	375	2.02	2.33	A.
February	358	119	213	1.15	1.20	A.
March	1,820	271	670	3.60	4.15	B.
April	1,090	323	622	3.34	3.73	B.
May	645	159	305	1.64	1.89	A.
June	512	65	162	.871	.97	A.
July	86	35	58.1	.312	.36	B.
August	79	24	42.3	.227	.26	B.
September	84	28	57.7	.310	.35	A.
The year	1,820	24	233	1.25	17.03	

Monthly discharge of Swift River at West Ware, Mass., for the years ending Sept. 30, 1912–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1913–14.						
October	436	23	125	0.672	0.77	B.
November	186	88	131	.704	.79	A.
December	328	127	198	1.06	1.22	A.
January	441	61	140	.753	.87	C.
February	620	116	238	1.28	1.33	C.
March	1,490	302	671	3.61	4.16	B.
April	1,310	612	852	4.58	5.11	B.
May	807	230	527	2.83	3.26	B.
June	210	81	144	.774	.86	B.
July	154	76	112	.602	.69	B.
August	188	40	78.0	.419	.48	C.
September	100	32	53.0	.285	.32	B.
The year	1,490	23	272	1.46	19.86	
1914–15.						
October	59	30	40.8	.219	.25	B.
November	81	38	57.0	.306	.34	B.
December	76	42	58.1	.312	.36	C.
January	1,180	36	326	1.75	2.02	C.
February	2,200	134	488	2.62	2.73	C.
March	895	143	254	1.37	1.58	B.
April	865	132	317	1.70	1.90	B.
May	461	106	224	1.20	1.38	B.
June	109	56	78.5	.422	.47	B.
July	925	136	351	1.89	2.18	B.
August	1,800	186	545	2.93	3.38	B.
September	180	84	121	.651	.73	B.
The year	2,200	30	237	1.27	17.32	

Days of deficiency in discharge of Swift River at West Ware, Mass., during the years ending Sept. 30, 1913–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.		
		1912–13	1913–14	1914–15
40	4.6	19	10	18
60	6.8	92	51	70
80	9.1	125	73	117
100	11.4	148	98	131
125	14.2	177	143	148
150	17.0	200	189	172
175	19.9	217	220	201
200	22.7	231	235	220
300	34.1	259	263	286
400	45.5	294	286	317
500	56.8	322	299	330
750	85.2	348	329	347
1,000	114	357	350	355
1,500	170	363	365	360
2,500	284	365	.....	365

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head-loss, which may be as large as 5 per cent.

QUABOAG RIVER AT WEST WARREN, MASS.

LOCATION.—At the dam of J. T. F. MacDonnell at West Warren.

DRAINAGE AREA.—144 square miles.

RECORDS AVAILABLE.—July 1 to October 18, 1903; October 25, 1904, to April 30, 1907.

GAGES.—Water-stage recorder maintained by the Massachusetts State Board of Health from July 1 to October 18, 1903. Vertical staff on left bank near headgates of canal; read once a day from October 25, 1904, to April 30, 1907.

DISCHARGE MEASUREMENTS.—One measurement was made by wading below dam.

CHANNEL AND CONTROL.—Control is the crest of the timber crib dam; length, 102.7 feet.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 52.2 feet, March 28, 1905; discharge, 1,210 second-feet. Minimum stage recorded: 50.15 feet, July 21, 1905; discharge, 20 second-feet.

WINTER FLOW.—Discharge relation not affected by ice.

REGULATION.—Flow regulated by operation of mills above station. The diurnal fluctuation thus caused is so great that it is considered impossible to compute mean daily or monthly discharge from one gage reading a day.

ACCURACY.—Discharge determined by means of a weir formula; record only fair.

COOPERATION.—Discharge record July 1 to October 18, 1903, furnished by Massachusetts State Board of Health.

The following discharge measurement was made by F. E. Pressey:

October 19, 1906: Gage height, 50.6 feet; discharge, 173 second-feet.

Daily discharge, in second-feet, of Quaboag River at West Warren, Mass., for 1903.

Day.	July.	Aug.	Sept.	Oct.	Day.	July.	Aug.	Sept.	Oct.
1	213	127	116	a 52	16	a 197	.....	151	102
2	233	129	124	81	17	.....	.....	233	151
3	207	130	a 131	78	18	.....	.....	208	202
4	192	115	a 73	105	19	.....	.....	178	.....
5	a 174	239	112	90	20	a 158	.....	164	.....
6	.....	241	121	82	21	219	a 109	151	.....
7	.....	224	118	95	22	225	111	125	.....
8	.....	196	116	99	23	228	106	133	.....
9	.....	191	114	144	24	209	101	123	.....
10	a 93	a 214	117	145	25	182	120	115	.....
11	128	.....	123	140	26	172	113	110	.....
12	170	.....	116	158	27	160	116	129	.....
13	270	.....	106	148	28	150	119	a 158	.....
14	217	.....	112	118	29	145	136	.....	.....
15	211	.....	127	108	30	136	146	.....	.....
					31	150	136	.....	.....

a Average of less than 24 hourly readings.

NOTE.—Discharge record July 1 to Oct. 18, 1903, obtained from automatic gage records and furnished by the Massachusetts State Board of Health.

Discharge, in second-feet, of Quaboag River at West Warren, Mass., for 1904–1907.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904-5.												
1	.....	182	141	a 123	123	123	931	229	106	106	41	72
2	.....	161	89	123	123	123	a 857	212	106	a 106	30	89
3	.....	141	89	205	106	106	820	195	89	89	30	a 476
4	.....	141	a 72	123	106	106	820	178	a 89	72	41	476
5	.....	182	72	123	a 123	a 106	783	161	89	72	30	416
6	.....	a 106	89	161	123	106	783	161	89	55	a 30	387
7	.....	106	72	254	123	123	747	a 161	89	55	41	332
8	.....	72	89	a 571	141	141	711	161	72	72	41	280
9	.....	30	72	605	141	182	a 711	161	89	a 72	30	205
10	.....	41	89	539	161	280	711	141	72	72	41	a 205
11	.....	30	a 55	507	141	280	675	141	a 89	55	41	205
12	.....	72	55	446	a 123	a 254	640	141	89	72	41	205
13	.....	a 30	41	416	123	254	605	123	89	89	a 55	182
14	.....	30	30	387	106	280	571	a 123	89	72	55	205
15	.....	41	30	a 358	106	280	539	123	89	55	41	182
16	.....	55	30	332	89	306	a 539	123	72	a 72	55	161
17	.....	89	20	306	106	332	539	141	72	72	55	a 161
18	.....	106	a 10	306	106	358	539	141	a 72	55	72	161
19	.....	89	20	254	a 106	a 711	507	161	72	55	72	161
20	.....	a 89	30	254	106	711	476	161	72	41	a 72	182
21	.....	106	30	254	106	747	446	a 161	55	20	72	161
22	.....	106	20	a 205	123	783	416	161	72	30	55	161
23	.....	89	30	205	141	820	a 358	141	89	a 41	72	141
24	.....	72	41	182	141	894	332	141	106	41	72	a 141
25	106	89	a 30	161	123	1,000	306	141	a 106	30	55	141
26	141	72	30	161	a 123	a1,120	306	123	106	41	55	141
27	161	a 55	229	141	123	1,160	280	123	106	41	a 55	123
28	161	30	229	141	106	1,210	254	a 123	89	30	55	123
29	141	30	229	a 141	.....	1,160	254	123	106	41	55	123
30	a 182	30	141	141	.....	1,120	a 229	106	106	a 41	41	106
31	182	.....	141	141	.....	1,080	.....	106	.....	55	55	.....
1905-6.												
1	a 106	89	89	106	205	280	a 605	358	571	a 205	161	106
2	106	89	89	106	182	254	605	358	539	229	161	a 123
3	106	72	a306	89	161	280	605	358	a 446	387	141	123
4	106	89	306	106	a 141	a 783	571	358	446	416	161	106
5	89	a 89	280	123	141	747	571	306	446	358	a 161	106
6	72	89	280	106	123	711	539	a 306	416	358	161	123
7	89	89	254	a 106	123	675	539	306	416	332	205	106
8	a 89	72	229	106	141	640	a 507	306	358	a 306	182	106
9	89	89	205	106	123	605	507	306	358	306	182	a 106
10	89	89	a 161	106	123	571	571	280	a 306	280	161	89
11	89	89	161	123	a 123	a 476	605	280	306	254	161	89
12	89	a 89	161	141	123	476	640	280	280	254	a 161	89
13	89	89	141	141	123	446	640	a 254	280	229	161	72
14	89	89	123	a 161	106	416	640	254	254	205	161	89
15	a 89	89	141	161	106	358	a 675	254	254	a 161	141	72
16	89	89	123	161	123	387	675	229	254	161	123	a 72
17	89	89	a 123	254	123	476	675	205	a 306	182	161	72
18	89	72	123	280	a 141	a 254	640	205	306	182	161	55
19	72	a 89	106	306	141	254	605	182	306	182	a 161	55
20	89	89	123	306	161	254	605	a 161	280	205	161	72
21	72	89	123	a 332	182	229	571	161	280	229	141	55
22	a 89	89	161	358	507	229	a 539	161	254	a 254	161	55
23	89	72	229	358	476	229	539	141	229	254	141	a 106
24	89	72	a 254	416	358	205	539	141	a 205	280	141	106
25	106	55	254	358	a 332	a 205	507	123	182	254	123	89
26	89	a 72	254	332	332	229	476	123	182	229	a 123	89
27	89	72	229	306	306	229	476	a 123	161	205	123	72
28	72	72	229	a 280	306	605	416	358	161	182	141	55
29	a 89	72	205	280	.....	640	a 416	675	161	a 161	141	55
30	89	89	182	254	.....	640	358	675	161	161	123	a 41
31	89	.....	a 161	229	.....	605	.....	605	.....	182	123	.....

Discharge, in second-feet, of Quaboag River at West Warren, Mass., for 1904–1907— Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.
1906–7.							
1	55	254	141	539	141	106	476
2	55	229	a 141	539	161	123	476
3	41	205	141	476	a 161	a 123	476
4	55	a 205	123	476	123	123	446
5	55	182	123	476	123	123	446
6	55	182	123	a 416	141	123	446
7	a 89	161	123	416	141	89	a 416
8	89	141	106	306	123	89	416
9	72	123	a 123	254	106	89	416
10	141	123	123	254	a 106	a 72	416
11	161	a 106	141	254	106	72	446
12	161	229	123	280	123	123	416
13	141	205	106	a 306	123	306	446
14	a 141	205	123	123	123	306	a 446
15	141	182	123	123	106	358	675
16	123	205	a 141	476	106	476	571
17	123	205	141	539	a 123	a 476	476
18	106	a 229	141	476	123	476	476
19	106	229	123	476	123	476	416
20	106	205	123	a 416	141	416	416
21	a 416	161	123	416	141	416	a 416
22	416	205	141	358	161	476	416
23	387	205	a 141	306	161	476	358
24	358	182	141	306	a 205	a 476	332
25	332	a 182	123	254	205	476	306
26	306	182	123	254	205	476	280
27	306	161	123	a 229	123	476	280
28	a 280	161	123	229	106	476	a 254
29	280	161	123	161	.....	416	254
30	254	161	a 123	141	.....	416	254
31	254	.....	476	141	.....	a 476	.....

a Sunday. Gage read about 4 p. m.

NOTE.—Discharge records do not give the mean for the day but are obtained by means of a weir formula from one gage reading a day taken about 6.15 a. m., except as noted on Sundays. The readings were taken before the mills farther upstream started operation and were not an index to the mean daily discharge.

QUABOAG RIVER AT WEST BRIMFIELD, MASS.

LOCATION.—At the two-span highway bridge just west of the West Brimfield station of the Boston & Albany Railroad, about 3 miles below West Warren.

DRAINAGE AREA.—150 square miles.

RECORDS AVAILABLE.—August 23, 1909, to September 30, 1915.

GAGE.—Prior to August 19, 1912, a vertical staff on upstream side of right abutment of bridge; August 19, 1912, and subsequently, a water-stage recorder at the downstream end of center pier referred to gage datum by a hook gage inside the well; all gages at same datum.

DISCHARGE MEASUREMENTS.—Made from the bridge or by wading.

CHANNEL AND CONTROL.—Bed of bowlders, gravel, and alluvial deposits; two channels under bridge; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded: 4.9 feet, March 1, 1910; discharge, 1,660 second-feet. Minimum stage recorded: 1.4 feet, September 17–18, 1910; discharge, 2.5 second-feet.

WINTER FLOW.—Discharge relation affected by ice. (See Pl. IX, *A*, p. 119.)

REGULATION.—The operation of mills at West Warren causes diurnal fluctuation in discharge at the station. For this reason it has not been possible to compute mean daily or monthly discharge prior to the installation of the automatic gage. (See fig. 1, p. 28.)

ACCURACY.—Rating curve well defined; discharge record since the installation of water-stage recorder considered good.

Discharge measurements of Quaboag River at West Brimfield, Mass., during 1909–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*			*Feet.*	*Sec.-ft.*
1909.							
Aug. 23	D. M. Wood	2.26	113	Nov. 15	C. S. De Golyer	2.40	157
23	do	2.15	95.0	16	do	2.53	177
Oct. 12	do	2.28	117				
				1913.			
1910.				Jan. 9	C. S. De Golyer	2.88	327
Feb. 17	D. M. Wood	[a] 2.81	316	Feb. 13	R. S. Barnes	[a] 3.43	183
17	do	[a] 3.02	353	Mar. 28	O. W. Hartwell	3.73	847
Mar. 2	T. W. Norcross	4.71	1,480	Aug. 9	C. H. Pierce	1.64	15.9
2	do	4.68	1,470				
6	do	4.17	1,110	1914.			
6	do	4.17	1,100	Jan. 5	R. S. Barnes	[a] 2.51	180
10	D. M. Wood	4.00	908	16	do	[a] 2.56	153
23	do	2.85	222	26	do	[a] 3.95	287
23	do	3.18	406	Feb. 12	do	[a] 2.84	193
23	do	3.11	389	28	Pierce and Barnes	[a] 3.20	155
July 11	R. C. Rice	2.30	125	Mar. 1	do	[a] 3.05	182
16	H. B. Alvord	1.70	[b] 16.0	Apr. 2	C. H. Pierce	3.73	839
16	do	2.35	136	Aug. 18	do	2.25	95.0
Sept. 11	W. G. Hoyt	1.97	64.6	19	do	1.87	28.8
				Dec. 3	R. S. Barnes	1.80	27.3
1911.				21	do	[a] 2.27	62.0
Mar. 7	C. S. De Golyer	2.45	191				
				1915.			
1912.				Jan. 4	R. S. Barnes	[a] 2.63	39.4
Feb. 9	Canfield and McMillan	[a] 3.59	97.4	6	do	[a] 2.06	31.9
Aug. 19	G. H. Canfield	1.62	11.8	Feb. 6	do	3.00	341
26	do	1.92	42.3	Mar. 5	do	3.12	464
26	do	2.39	142	Aug. 14	Hardin Thweatt	2.55	194

[a] Discharge relation affected by ice.
[b] Partly estimated.

NOTE.—Since Aug. 26, 1912, gage heights refer to the hook gage.

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912.

Day.	August.				Day.	August.			
	A. M.		P. M.			A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.		Time.	Discharge.	Time.	Discharge.
1909.					1909.				
23			4.00	75	28	8.00	12	5.10	59
24	8.00	11	5.00	127					
25	8.00	11	5.10	120	29	8.00	11	5.45	54
					30	8.00	39	5.10	127
26	8.00	11	5.30	127	31	8.15	18	5.00	89
27	8.00	11	5.10	131					

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	September.				October.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time	Discharge.	Time.	Discharge.	Time.	Discharge.
1909.								
1	7.45	20	5.10	71	8.00	6	5.00	109
2	8.10	22	5.00	89	8.00	6	5.10	22
3	7.45	22	5.05	54	8.00	39	5.00	71
4	8.00	22	5.00	105	8.20	131	5.00	138
5	9.00	14	5.00	71	8.15	6	4.45	71
6	8.00	33	5.20	217	8.10	6	4.45	165
7	8.10	39	4.50	120	8.15	18	5.00	131
8	8.00	11	5.10	109	8.10	12	5.10	109
9	8.10	11	5.10	71	8.25	18	5.05	20
10	8.05	11	5.15	54	8.00	33	5.00	156
11	8.10	6	5.10	18	8.00	51	5.20	156
12	8.00	18	5.00	39	8.30	13	5.10	156
13	8.10	31	5.10	120	8.00	17	5.00	127
14	8.10	11	5.20	71	8.30	20	4.45	113
15	8.20	6	5.00	131	8.00	7	5.10	120
16	8.00	6	5.10	99	8.00	10	5.00	20
17	8.20	11	5.00	131	8.00	11	5.00	39
18	8.15	11	5.10	39	8.20	22	5.10	127
19	8.00	22	5.15	39	8.10	8	5.10	120
20	8.10	54	5.00	131	8.00	7	5.10	113
21	8.10	6	5.20	131	8.00	6	5.00	120
22	8.05	11	5.00	89	7.55	12	5.00	120
23	8.00	6	5.10	89	8.20	11	5.20	54
24	8.00	6	4.55	120	8.00	20	5.00	71
25	8.00	12	5.00	39	8.00	80	5.10	127
26	8.30	22	5.00	33	8.10	8	4.45	151
27	8.15	59	5.00	109	7.45	11	5.00	127
28	8.30	71	5.15	156	8.00	11	5.10	109
29	8.10	224	5.10	252	8.20	6	5.00	120
30	8.15	191	5.00	156	8.00	7	5.00	39
31					8.00	7	5.00	12

Day.	November.				December.			
1	8.20	7	5.20	156	7.55	11	4.45	57
2	8.00	11	5.10	120	7.50	33	4.40	93
3	8.20	6	5.05	127	8.00	11	4.45	109
4	8.00	7	5.00	120	7.50	8	5.05	51
5	8.10	11	5.10	113	8.00	11	5.00	18
6	8.10	7	4.45	18	8.15	54	5.00	99
7	8.00	6	5.00	39	8.00	11	5.10	109
8	8.35	156	5.00	131	8.10	8	4.45	120
9	8.05	6	5.10	109	8.20	14	5.00	156
10	8.00	6	5.05	156	8.30	18	4.45	156
11	8.10	54	5.15	109	8.15	27	4.45	54
12	8.15	6	5.10	54	8.00	27	5.00	71
13	8.30	7	4.40	18	8.00	89	5.00	156
14	8.00	11	5.00	18				
15	8.40	131	5.00	131				
16	8.30	18	5.00	109				
17	8.20	7	5.00	54				
18	8.10	7	5.00	89				
19	8.00	6	4.50	80				
20	8.10	6	4.50	57				
21	8.00	6	5.00	18				
22	8.00	18	5.00	89				
23	8.20	7	5.00	89				
24	8.00	6	4.45	80				
25	8.00	2.5	5.00	71				
26	8.00	62	5.00	89				
27	8.00	18	5.00	89				
28	8.00	11	5.00	18				
29	8.20	89	5.00	131				
30	8.10	22	4.45	99				
31								

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	March.				April.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	8.15	1,660	.....	.....	9.00	371	6.00	335
2	.....	.....	5.00	1,410	8.30	348	5.30	252
3	8.15	1,320	5.15	1,340	8.00	252	5.00	252
4	9.15	1,260	5.30	1,260	9.10	313	5.15	245
5	8.30	1,180	5.00	1,140	8.30	380	6.00	217
6	9.20	1,060	.....	1,040	8.30	380	6.00	217
7	8.30	1,200	5.00	1,180	8.15	380	6.00	185
8	8.00	1,140	5.30	1,080	7.25	179	4.00	231
9	8.30	1,060	5.00	1,020	8.30	252	6.00	185
10	9.00	945	5.30	896	8.00	131	5.30	131
11	9.00	875	5.15	726	8.50	245	6.00	185
12	8.00	805	4.45	770	9.00	335	6.00	272
13	8.00	645	4.50	645	9.00	353	6.15	217
14	8.30	705	5.10	574	8.15	335	4.45	201
15	8.10	585	5.15	520	8.00	283	5.00	185
16	8.45	530	5.15	530	8.00	245	6.15	156
17	8.40	480	5.20	585	8.00	156	5.00	252
18	8.45	530	5.10	480	8.45	291	3.40	191
19	8.30	480	5.20	395	9.00	272	6.00	291
20	8.00	380	4.30	380	9.00	430	5.15	268
21	9.15	455	5.00	430	6.15	245	5.30	245
22	9.15	470	5.10	371	9.00	326	5.30	217
23	8.00	335	4.30	380	9.00	335	5.45	211
24	9.00	400	6.00	353	.....	.....	5.00	191
25	8.45	390	5.15	335	9.00	335	4.45	185
26	9.00	390	4.45	291	8.45	335	6.00	326
27	8.00	417	4.30	317	9.00	430	6.00	380
28	8.00	380	5.15	326	9.00	390	6.10	291
29	8.45	390	5.35	291	9.00	480	6.00	185
30	9.00	371	5.00	335	8.45	380	5.30	217
31	9.00	380	6.10	313	.....	.....	.....	.....

	May.				June.			
1	9.00	380	4.00	272	8.30	335	4.30	156
2	9.15	430	5.30	217	8.30	291	5.10	162
3	8.45	348	6.00	231	8.45	252	5.15	131
4	8.45	335	5.45	217	8.30	335	5.00	14
5	9.00	335	5.30	245	8.15	89	4.15	109
6	9.15	380	5.45	228	8.20	136	4.45	162
7	6.45	217	6.00	185	8.20	291	4.45	156
8	8.30	185	5.45	185	8.00	120	4.45	156
9	9.15	283	6.00	252	7.45	113	4.00	162
10	8.45	291	5.00	201	8.00	120	4.15	162
11	9.00	272	5.20	207	8.20	201	4.00	185
12	8.30	291	5.30	217	8.00	185	4.30	201
13	8.30	335	5.17	201	9.00	348	4.15	185
14	9.00	283	5.30	156	8.40	211	4.30	179
15	8.45	170	4.30	185	8.35	211	4.00	201
16	8.45	291	5.00	185	8.45	430	4.30	217
17	8.45	326	5.00	211	8.00	211	5.00	371
18	8.50	291	2.35	89	8.10	201	4.30	127
19	.....	.....	4.45	179	8.00	131	5.00	144
20	9.00	304	7.30	156	8.10	162	5.30	144
21	10.30	201	6.45	170	8.20	272	6.30	131
22	9.00	185	7.55	201	8.30	291	5.15	179
23	9.00	245	4.25	162	8.20	283	4.30	156
24	9.15	264	7.45	201	8.15	283	4.40	156
25	9.00	252	4.35	162	8.15	260	4.30	11
26	8.00	156	4.30	162	8.00	89	4.00	105
27	7.45	136	4.25	170	8.00	120	5.30	131
28	7.40	131	4.00	156	8.10	11	4.20	120
29	9.00	162	4.15	162	7.40	7	4.15	120
30	9.15	99	5.30	89	7.45	10	4.30	109
31	8.40	89	5.05	136	.....	.....	.....	.....

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	July.				August.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	8.05	80	4.30	113	8.30	120	5.30	211
2	8.15	260	5.30	14	9.00	131	5.40	185
3	8.15	54	4.15	54	9.00	17	5.30	113
4	8.05	71	.....	.....	9.15	0	5.30	99
5	8.10	54	4.30	89	9.00	14	5.15	109
6	8.00	29	5.30	89	8.15	17	4.30	27
7	8.15	29	5.00	89	8.00	33	4.30	39
8	8.15	29	4.30	89	8.00	51	4.40	127
9	8.20	22	4.00	144	8.00	11	4.50	156
10	8.00	18	4.30	18	8.00	11	5.30	272
11	8.20	37	.....	109	8.25	37	5.30	109
12	8.15	27	5.30	71	8.20	42	5.45	109
13	10.00	156	5.40	156	8.20	39	5.00	109
14	8.00	11	5.30	156	8.00	54	4.30	54
15	8.00	14	4.30	22	9.30	217	5.00	109
16	7.50	17	4.00	14	8.30	18	5.20	109
17	8.00	18	6.00	39	8.15	14	4.30	109
18	8.00	39	6.20	109	8.15	12	5.00	109
19	8.10	14	4.40	105	8.15	14	5.10	109
20	8.40	14	4.15	109	9.30	131	5.10	14
21	8.15	14	4.30	120	8.00	14	4.00	18
22	8.15	17	4.30	105	9.00	109	5.30	89
23	8.20	14	4.30	14	8.30	14	5.15	99
24	7.45	27	4.00	33	8.20	12	5.00	89
25	8.30	50	4.30	120	8.30	14	5.30	54
26	8.40	18	5.00	105	8.15	11	5.30	54
27	8.00	2	4.40	109	8.20	11	6.00	6
28	8.40	17	4.30	105	8.00	14	5.00	46
29	8.40	14	4.40	99	8.40	170	5.00	11
30	8.00	10	4.30	27	8.45	156	5.35	46
31	8.00	54	6.00	75	8.15	11	6.00	54

Day.	September.				October.			
1	8.50	46	6.00	99	8.40	7.0	5.00	8.5
2	8.40	22	5.30	54	8.30	8.5	4.30	11
3	8.45	22	5.30	22	9.10	131	5.00	54
4	8.00	39	3.00	54	8.35	7.0	5.25	54
5	8.20	71	4.00	71	8.50	12	5.30	54
6	8.15	54	5.30	109	8.30	11	5.20	54
7	8.15	25	5.30	131	8.30	11	5.40	54
8	8.20	14	5.30	109	8.30	11	5.00	11
9	8.50	25	5.30	109	8.45	11	4.30	11
10	8.25	18	5.00	18	8.30	11	4.45	54
11	10.00	54	5.00	54	9.00	20	5.00	89
12	8.15	54	2.50	109	8.45	7.0	5.30	109
13	8.00	6.0	5.15	89	9.00	8.5	5.30	89
14	8.15	7.0	5.30	89	8.40	7.0	5.30	89
15	8.00	8.0	5.00	89	8.30	8.5	5.00	22
16	8.30	11	5.30	99	8.30	27	4.00	27
17	8.20	11	5.00	2.5	8.30	27	5.15	71
18	8.00	2.5	5.00	2.5	8.20	14	3.50	22
19	9.00	75	5.10	89	8.30	17	5.20	71
20	8.30	11	5.30	109	8.25	14	5.00	39
21	8.30	11	5.30	109	8.30	17	5.30	71
22	9.00	11	5.00	75	8.25	14	5.00	12
23	8.40	12	5.30	109	8.20	14	5.00	14
24	8.45	11	5.40	18	8.30	17	5.30	71
25	8.30	27	5.00	27	8.30	8.5	5.45	62
26	8.30	27	5.30	109	8.25	8.5	5.45	62
27	8.40	18	5.30	89	8.25	7.0	5.45	68
28	8.30	11	5.30	89	8.45	11	4.40	27
29	8.25	7.0	5.40	80	9.00	12	5.00	22
30	8.30	7.0	5.25	54	9.00	22	4.40	22
31	.....	.....	.....	.....	8.35	25	4.40	27

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	November.				December.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1910.								
1	9.10	14	5.00	54	8.30	14	3.00	61
2	8.50	14	5.00	54	8.20	12	4.30	54
3	8.50	17	4.40	71	8.30	14	5.00	22
4	8.30	14	5.00	71	8.00	22	4.20	22
5	8.50	14	4.00	39	8.40	27	4.30	39
6	8.00	39	4.00	46	8.30	17	3.30	89
7	8.40	54	4.50	109	8.40	14	4.30	54
8	8.50	22	4.40	120	8.30	18	4.40	46
9	8.30	7.5	4.30	127	8.45	17	4.00	89
10	8.30	10	5.00	120	8.30	14	4.00	14
11	8.30	25	4.30	120	8.20	17	4.30	18
12	8.40	22	4.00	37	8.30	22	3.30	71
13	8.00	39	4.00	39	.....	.....	.....	.....
14	8.40	46	4.45	109	.....	.....	.....	.....
15	8.30	25	4.40	120	.....	.....	.....	.....
16	8.30	14	4.25	109	.....	.....	.....	.....
17	8.30	11	4.40	109	.....	.....	.....	.....
18	8.30	10	4.35	105	.....	.....	.....	.....
19	8.45	14	4.40	14	.....	.....	.....	.....
20	9.00	17	4.00	17	.....	.....	.....	.....
21	9.15	156	4.20	89	.....	.....	.....	.....
22	8.40	17	4.30	89	.....	.....	.....	.....
23	8.30	14	4.00	62	.....	.....	.....	.....
24	8.30	10	4.10	99	.....	.....	.....	.....
25	9.15	156	4.30	89	.....	.....	.....	.....
26	9.00	39	4.10	14	.....	.....	.....	.....
27	8.20	11	4.15	11	.....	.....	.....	.....
28	8.30	14	4.20	71	.....	.....	.....	.....
29	8.20	14	4.25	75	.....	.....	.....	.....
30	8.40	14	4.25	75	.....	.....	.....	.....
31	.....	.....	.....	.....	.....	.....	.....	.....

Day.	March.				April.			
1911.								
1	.....	.....	.....	.....	9.00	480	5.00	272
2	.....	.....	.....	.....	8.45	272	4.00	291
3	.....	.....	.....	.....	9.00	430	4.40	430
4	.....	.....	.....	.....	9.00	530	4.50	455
5	.....	.....	.....	.....	9.00	597	5.00	480
6	.....	.....	.....	.....	8.40	574	5.00	480
7	.....	.....	.....	.....	9.00	585	5.10	470
8	.....	.....	.....	.....	9.10	585	4.30	252
9	.....	.....	.....	.....	9.00	272	5.00	272
10	.....	.....	.....	.....	8.45	390	5.00	470
11	.....	.....	.....	.....	8.00	366	5.00	455
12	.....	.....	.....	.....	9.00	430	4.40	455
13	.....	.....	.....	.....	8.45	480	4.30	470
14	.....	.....	.....	.....	9.00	480	5.00	455
15	.....	.....	.....	.....	9.00	480	5.00	335
16	.....	.....	.....	.....	8.45	335	4.45	344
17	.....	.....	.....	.....	9.00	380	5.50	335
18	.....	.....	.....	.....	8.50	380	4.00	380
19	.....	.....	.....	.....	8.45	358	5.35	313
20	.....	.....	.....	.....	9.00	480	5.15	335
21	.....	.....	.....	.....	9.00	585	5.30	380
22	.....	.....	.....	.....	8.30	470	6.00	291
23	.....	.....	.....	.....	9.30	291	4.00	313
24	.....	.....	.....	.....	9.00	480	4.00	380
25	.....	.....	.....	.....	9.10	480	4.50	335
26	.....	.....	.....	.....	9.00	390	5.00	335
27	.....	.....	.....	.....	8.30	234	5.00	335
28	.....	.....	.....	.....	8.40	234	4.50	335
29	.....	.....	.....	.....	9.00	234	5.00	217
30	.....	.....	.....	.....	8.00	234	3.30	245
31	.....	.....	.....	.....	.....	.....	.....	.....

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909-1912—Con.

Day.	May.				June.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	9.00	252	4.50	234	9.00	27	4.00	54
2	8.45	245	5.00	224	8.45	22	4.30	46
3	9.00	252	4.45	217	8.40	18	6.30	39
4	9.10	252	6.00	234	9.00	17	5.00	46
5	9.00	217	5.30	185	8.55	18	4.00	75
6	8.50	201	5.00	156	8.45	27	5.00	109
7	10.00	156	4.50	170	8.40	25	5.00	105
8	8.30	170	5.00	185	8.45	27	5.40	109
9	9.10	201	5.00	151	8.35	27	5.00	105
10	10.00	211	6.00	131	8.30	29	5.00	131
11	9.00	217	6.00	131	9.30	156	6.30	54
12	9.00	211	5.15	131	9.00	33	5.00	109
13	8.55	201	4.50	89	9.15	25	4.50	99
14	9.00	105	4.00	109	9.00	22	6.00	109
15	9.40	185	4.40	99	8.50	22	5.50	109
16	9.00	165	4.50	105	9.00	20	5.00	99
17	8.40	185	4.00	105	8.50	20	4.00	14
18	9.00	179	5.00	109	8.30	18	5.00	46
19	8.40	201	4.40	109	9.00	54	5.15	89
20	9.00	217	4.00	37	8.40	20	5.00	109
21	9.00	42	4.55	185	8.50	18	4.50	105
22	8.30	217	5.00	151	8.50	18	4.10	109
23	9.00	245	4.40	144	9.00	17	5.15	99
24	8.45	217	4.45	131	8.55	20	4.10	22
25	8.50	211	4.50	131	9.10	25	4.00	29
26	9.10	234	5.00	136	8.40	20	4.40	27
27	8.30	217	5.00	85	8.45	22	4.10	109
28	8.30	89	4.50	105	9.00	22	4.15	109
29	9.00	39	4.30	80	9.10	18	4.15	105
30	8.50	42	4.00	89	9.00	17	4.30	109
31	8.40	27	4.40	80				

Day.	July.				August.			
1	9.00	18	12.40	99	9.00	11	5.00	51
2	9.40	25	6.00	27	8.45	14	5.00	46
3	9.15	27	4.40	109	8.45	11	4.50	46
4	9.00	27	5.00	27	8.50	12	5.10	54
5	9.10	25	4.40	105	8.45	11	5.30	14
6	9.00	25	5.10	105	9.00	14	4.00	18
7	8.40	27	5.00	109	10.00	39	5.00	99
8	9.00	25	4.50	22	9.00	11	4.40	99
9	9.00	6.0	3.00	6.0	9.00	10	4.00	109
10	8.40	11	5.00	131	8.45	8.5	5.00	109
11	8.45	14	6.00	131	8.50	6.0	5.10	105
12	8.40	11	6.00	131	9.00	7.0	5.00	6.0
13	9.00	10	4.00	127	9.00	8.5	4.00	8.5
14	9.10	11	6.00	131	9.10	10	5.30	89
15	8.40	8.5	5.00	6.0	9.00	6.0		
16	9.00	7.5	4.00	8.5	9.00	7.0	6.30	99
17	8.40	8.5	5.00	33	8.45	6.0	5.00	99
18	9.00	10	5.00	27	8.30	6.0	4.40	105
19	11.00	54	4.45	27	9.00	8.5	4.00	6.0
20	8.45	8.5	5.00	33	9.15	8.5	4.00	10
21	9.00	8.5	4.50	33	9.00	10	4.00	54
22	9 00	6.0	4.00	11	9.00	6.0	5.00	62
23	9.10	11	4.40	14	8.45	7.0	4.50	54
24	9.00	17	5.00	33	8.50	6.0	5.00	51
25	9.00	20	5.00	39	8.45	8.5	5.15	54
26	8.45	18	4.45	51	9.00	7.0	4.00	10
27	8.50	18	5.00	46	9.00	8.5	4.10	10
28	9.00	14	5.10	54	8.40	11	5.00	54
29	8.45	8.5	4.00	11	8.40	37	5.00	109
30	9.00	17	6.10	89	9.00	39	4.45	109
31	9.10	14	6.00	89	8.45	54	5.00	99

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	September.				October.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1911.								
1	9.00	75	4.00	113	10.00	120	4.50	131
2	8.35	71	5.10	71	9.00	144	5.00	136
3	9.30	71	5.00	75	9.10	185	5.00	156
4	8.30	89	4.50	131	9.00	179	4.40	156
5	9.00	54	5.30	131	9.00	170	5.30	162
6	8.40	46	5.00	136	8.55	170	5.00	156
7	9.10	51	6.00	144	9.00	185	4.30	105
8	9.00	54	5.10	109	9.30	109	6.00	109
9	9.00	39	4.30	39	9.00	120	5.00	109
10	8.35	46	5.40	51	9.10	185	5.00	109
11	8.50	54	6.00	99	8.40	170	4.50	113
12	9.00	39	5.00	109	9.00	165	4.35	105
13	9.00	131	5.10	113	9.30	185	4.00	109
14	9.00	185	5.00	109	9.00	179	4.00	109
15	9.00	185	4.50	109	9.00	127	4.00	131
16	8.45	185	5.10	156	8.50	326	4.10	109
17	8.50	156	4.00	170	9.00	335	4.00	131
18	9.00	185	4.00	156	9.10	348	5.00	144
19	9.10	131	4.30	109	8.50	335	4.50	185
20	9.15	131	4.50	99	8.45	380	5.10	191
21	9.00	109	4.30	109	9.00	358	5.00	217
22	8.40	22	5.00	113	8.55	217	4.00	234
23	8.30	20	5.00	27	9.00	252	4.10	217
24	9.30	37	4.50	39	9.00	358	5.10	217
26	9.10	156	5.30	131	8.50	335	5.00	211
26	8.40	29	5.00	127	8.45	335	4.30	201
27	8.45	27	5.00	109	9.00	344	4.30	201
28	9.00	33	5.10	113	9.00	313	5.00	217
29	9.00	37	5.00	131	10.00	234	4.10	228
30	8.50	39	4.40	42	9.00	234	5.30	185
31					9.00	217	5.15	191

	November.				December.			
1	9.00	211	4.50	170	9.00	335	4.10	353
2	8.50	201	4.45	162	9.00	335	3.55	109
3	9.00	185	5.00	156	9.00	127	4.00	185
4	8.50	185	4.30	109	8.45	313	4.50	380
5	10.00	185	5.00	201	9.00	313	5.00	291
6	9.00	211	4.50	185	9.00	313	4.00	272
7	8.55	195	3.30	211	8.45	291	4.10	252
8	8.10	185	5.30	201	8.50	291	4.15	252
9	8.45	191	5.00	207	9.00	291	4.30	185
10	8.30	185	4.50	201	9.00	185	5.00	211
11	9.00	179	5.00	109	8.50	291	4.40	291
12	10.00	120	3.00	127	9.00	283	4.50	283
13	10.00	179	5.00	191	9.00	291	5.00	272
14	8.10	185	4.50	211	8.40	313	4.35	272
15	9.00	201	4.35	201	8.50	326	4.40	291
16	8.50	185	5.00	201	8.50	335	4.30	252
17	8.40	211	5.00	217	9.00	335	4.00	390
18	8.55	224	4.30	211	8.45	335	4.30	380
19	9.00	211	4.25	211	8.30	291	5.00	362
20	8.50	217	4.40	217	9.10	300	5.10	390
21	9.00	217	4.00	224	9.00	313	4.30	380
22	10.00	335	4.00	252	9.00	335	4.30	380
23	9.45	371	4.40	245	8.50	313	4.00	313
24	9.00	291	4.10	260	10.00	335	4.20	335
25	9.00	313	4.00	335	9.00	358	5.00	291
26	10.00	335	3.30	358	8.45	335	4.00	380
27	9.00	335	5.00	335	8.45	326	4.10	390
28	8.50	326	4.50	390	9.10	313	4.00	390
29	8.50	313	5.00	358	9.00	326	4.35	362
30	8.55	355	5.10	380	9.00	291	4.00	283
31					9.10	291	4.10	313

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	January.				March.			
	A. M.		P. M.		A. M.		P. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	9.00	380	4.30	390				
2	9.00	380	4.10	430				
3	8.30	585	4.15	430				
4	9.30	585	5.00	455				
5	8.40	770	5.00	520				
6	9.10	910	4.00	530				
7								
8								
9								
10								
11								
12								
13							4.20	
14					9.10	2,250	3.50	2,050
15					9.00	1,950		
16					8.00	1,180	4.00	1,140
17					9.00	1,140	4.30	1,120
18					9.30	1,100	4.00	1,060
19					9.00	1,060	3.45	980
20					8.30	910	4.00	840
21					9.15	840	4.30	770
22					9.00	705	5.00	705
23					8.55	675	4.00	657
24					9.00	645	4.10	645
25					9.45	645	4.30	645
26					9.00	615	5.00	585
27					9.30	585	5.10	585
28					8.50	585	4.45	603
29					9.00	910	5.50	1,060
30					8.50	980	5.00	910
31					10.00	910	4.30	910

	April.				May.			
1	9.00	910	4.50	910	9.10	470	6.30	455
2	8.40	910	5.00	910	9.00	455	6.00	440
3	8.50	910	4.10	910	8.50	440	5.00	430
4	9.00	910	4.30	910	10.00	430	6.10	430
5	9.30	910	5.00	910	9.00	440	6.00	430
6	8.30	910	4.50	875	8.50	440	6.30	430
7	10.00	875	5.00	875	8.00	430	5.50	430
8	9.00	854	4.40	840	8.30	430	5.30	420
9	8.45	840	5.00	840	8.30	420	6.15	405
10	9.30	840	4.10	854	8.45	420	6.30	420
11	9.00	854	5.00	840	9.10	430	5.30	380
12	10.00	826	5.30	805	10.00	405	5.30	405
13	9.00	770	5.00	770	8.30	430	5.00	430
14	9.10	757	5.00	738	8.30	420	6.00	430
15	8.40	705	4.35	705	8.45	430	6.10	430
16	9.00	675	4.50	675	9.00	420	6.00	420
17	9.00	705	4.10	705	8.00	455	5.00	440
18	9.10	738	5.10	738	9.00	430	4.50	430
19	9.30	770	5.40	826	9.00	430	6.00	430
20	10.00	805	4.50	805	8.30	440	5.55	430
21	9.00	770	4.00	770	8.50	420	6.00	405
22	9.10	770	4.10	757	8.30	430	6.10	430
23	9.00	738	5.50	738	9.00	430	5.00	440
24	8.40	738	6.00	705	8.00	430		
25	8.55	693	5.00	675	8.30	455	6.00	380
26	9.00	645	5.10	615	9.00	380	5.30	405
27	9.00	558	5.00	505	9.30	455	5.50	430
28	10.00	505	5.50	505	8.30	405	6.00	405
29	8.30	505	5.10	505	8.50	405	5.30	380
30	9.30	490	5.30	490	9.00	390	4.50	380
31	9.00	480	6.00	480	9.00	380	5.00	380

Discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for 1909–1912—Con.

Day.	June.				July.			
	A. M.		A. M.		A. M.		A. M.	
	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.	Time.	Discharge.
1912.								
1	9.00	380	5.30	380	7.00	39	6.30	217
2	9.00	405	5.00	371	7.00	27	5.30	109
3	9.30	430	4.30	335	7.05	27	5.25	131
4	8.00	380	4.40	335	7.30	27	7.15	170
5	7.45	283	6.30	291	7.00	39	5.35	120
6	8.30	430	6.45	217	7.05	18	6.00	18
7	8.15	252	6.20	245	9.00	22	7.30	8
8	10.00	291	6.45	185	7.05	18	7.20	131
9	10.15	185	6.45	217	9.05	22	5.20	80
10	9.00	358	6.30	185	8.00	18	6.00	89
11	9.00	358	4.15	156	8.30	18	5.30	109
12	8.45	335	4.00	234	9.00	18	5.55	71
13	9.00	272	5.00	185	8.30	6	4.10	33
14	9.15	272	6.00	131	8.20	27	7.00	18
15	9.00	283	6.00	89	9.00	27	6.45	89
16	10.00	109	6.00	127	7.00	27	6.30	109
17	8.30	179	5.30	185	7.05	18	6.00	120
18	8.25	27	7.35	179	7.00	14	6.15	131
19	9.00	25	6.00	131	7.15	18	5.30	89
20	8.45	37	7.10	156	9.00	14	6.10	27
21	9.00	27	6.00	156	9.00	18	6.30	14
22	9.20	33	6.30	54	9.10	14	6.00	127
23	10.00	71	4.00	89	8.45	14	6.15	131
24	10.00	156	5.30	131	8.55	14	6.30	127
25	8.30	27	7.10	131	9.10	11	6.10	120
26	8.45	33	6.00	131	8.50	12	5.50	131
27	8.30	27	5.50	131	9.15	14	6.00	127
28	9.00	29	6.20	131	10.00	136	6.10	156
29	10.00	27	7.00	39	9.00	11	6.20	120
30	9.00	39	3.30	37	9.25	12	7.00	113
31					9.35	12	6.55	109

	August.			
1	9.00	11	6.00	109
2	8.45	12	6.10	109
3	9.10	11	6.30	51
4	9.15	71	6.40	105
5	9.15	109	5.30	113
6	9.00	12	6.00	109
7	9.00	14	6.10	109
8	8.45	11	6.55	113
9	9.20	17	6.10	109
10	9.00	17	6.00	27
11	10.30	39	6.30	54
12	9.30	62	6.15	109
13	9.00	17	6.00	109
14	9.00	17	6.30	109
15	11.10	105	6.45	109
16	9.00	12	6.00	109
17	9.30	12	6.15	33
18	10.00	46	4.30	59
19	9.00	59	6.00	109
20	9.00	12	6.10	109
21	9.00	12	5.50	113
22	8.50	12	6.00	131
23	9.20	11	5.00	113
24	9.45	18	5.50	18
25			6.00	54
26	7.45	40	4.00	54
27	8.00	18	6.00	131
28	8.00	21	6.10	71
29	8.00	18	5.35	109
30	8.00	19	5.40	71
31	8.50	20	4.00	20

Daily discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for the years ending Sept. 30, 1912–1915.

Day.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.														
1	.....	23	46	42	44	274	270	414	855	412	330	56	50	37
2	.....	53	31	40	86	250	230	415	729	389	307	56	32	69
3	.....	81	19	65	96	279	300	291	779	359	272	58	28	52
4	.....	53	19	90	94	251	280	352	732	342	252	24	62	48
5	.....	50	19	83	91	233	220	334	704	309	223	31	39	43
6	.....	50	25	50	90	268	180	311	664	290	196	37	41	40
7	.....	27	50	65	82	226	160	209	603	241	179	68	44	31
8	.....	23	26	140	99	336	148	275	558	226	180	59	34	68
9	.....	68	32	123	87	250	138	301	523	206	173	47	29	53
10	.....	48	39	111	59	316	132	288	501	174	152	59	26	43
11	.....	48	47	81	64	291	125	334	529	154	145	61	49	43
12	.....	48	41	104	70	332	120	347	737	158	131	39	40	41
13	.....	48	24	82	70	299	117	317	783	150	132	40	34	29
14	.....	48	51	112	60	354	116	407	823	148	110	77	36	24
15	.....	48	33	93	50	337	116	465	823	144	99	55	35	55
16	.....	67	31	62	90	279	117	468	962	138	111	61	23	38
17	.....	47	32	63	87	270	118	431	1,010	146	91	57	17	39
18	.....	42	31	81	82	281	122	429	941	140	85	60	51	38
19	60	36	21	58	96	265	126	414	856	143	80	41	52	45
20	65	36	18	48	99	281	132	438	756	120	85	35	46	30
21	60	25	47	38	76	281	138	451	741	116	77	71	44	33
22	65	15	47	50	94	271	145	411	704	138	79	50	44	76
23	63	60	57	42	143	268	155	419	651	199	105	61	46	64
24	33	35	42	48	159	285	170	416	599	364	74	59	11	60
25	41	28	32	79	192	284	185	413	544	333	64	56	49	59
26	74	35	35	46	304	251	250	515	502	310	71	41	37	53
27	56	39	43	58	183	274	325	782	471	296	61	28	34	38
28	43	30	78	55	130	248	375	853	467	302	45	62	35	48
29	47	40	54	51	135	234	.....	904	470	393	52	59	40	71
30	45	72	40	56	186	249	.....	910	450	366	82	59	63	50
31	25	.....	35	.....	301	241	.....	920	.....	347	.....	53	70	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	48	166	135	183	270	176	733	575	163	91	58	61
2	62	158	131	211	270	1,110	777	537	157	157	59	67
3	68	161	122	193	293	1,040	756	513	151	169	81	59
4	36	159	119	157	293	1,080	723	513	160	118	85	37
5	41	132	120	160	293	1,030	709	598	154	113	73	44
6	72	130	120	145	293	1,010	654	682	160	136	65	43
7	53	131	142	130	270	914	675	640	146	148	47	44
8	50	116	210	118	230	831	682	614	133	136	69	47
9	52	161	188	118	176	750	770	607	118	118	53	34
10	51	260	223	105	176	633	743	588	98	166	73	28
11	34	199	214	105	176	594	736	549	98	160	63	25
12	49	177	179	105	160	531	682	562	87	160	69	32
13	69	130	174	105	160	477	633	715	75	160	55	14
14	54	148	174	105	160	433	627	668	89	128	43	49
15	45	141	174	118	145	407	601	627	89	113	61	44
16	34	134	218	145	145	423	682	607	85	113	61	49
17	40	144	202	145	145	450	627	568	101	115	61	38
18	43	133	202	130	130	455	607	549	87	108	61	37
19	33	131	171	130	130	407	588	507	73	61	87	40
20	81	145	189	118	130	375	575	477	75	87	69	31
21	74	146	170	105	118	355	575	444	58	81	94	55
22	72	139	173	105	118	370	549	423	118	87	91	35
23	66	135	170	73	118	340	507	380	73	81	77	49
24	67	135	233	94	105	320	501	340	101	83	103	46
25	150	114	227	391	105	275	495	340	81	89	85	16
26	245	105	249	193	94	360	562	320	85	58	73	38
27	265	104	222	176	94	423	614	297	89	75	65	18
28	234	90	241	176	94	627	594	262	55	73	63	79
29	219	124	285	176	.....	668	601	242	125	67	58	101
30	215	135	290	176	.....	682	620	214	85	73	58	91
31	192	.....	266	176	.....	689	.....	183	.....	73	73	.....

Daily discharge, in second-feet, of Quaboag River at West Brimfield, Mass., for the years ending Sept. 30, 1912–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	65	13	52	33	284	620	128	136	113	75	94	87
2	21	41	55	28	193	568	130	148	77	136	115	81
3	44	37	49	18	262	477	125	148	85	133	142	79
4	25	40	58	50	401	335	120	136	79	136	250	58
5	49	21	55	63	562	455	151	133	58	118	423	79
6	44	28	34	101	401	417	163	130	73	120	330	77
7	37	25	71	1,000	396	380	176	123	98	94	302	83
8	31	18	40	935	375	345	176	136	59	118	284	69
9	27	43	46	763	375	306	190	145	63	254	288	61
10	24	40	46	729	311	284	193	136	63	211	279	75
11	16	38	37	661	320	258	207	120	52	190	254	37
12	40	16	38	797	266	246	246	120	49	183	234	53
13	50	14	50	970	284	218	242	113	32	166	250	77
14	37	28	59	722	270	211	238	108	79	157	207	77
15	34	25	73	581	391	204	226	85	58	151	193	79
16	28	59	125	562	633	186	211	96	56	139	176	89
17	29	56	142	525	562	186	207	120	56	110	157	77
18	21	49	113	1,020	507	169	190	98	65	103	139	50
19	67	41	79	709	483	163	183	87	55	113	123	49
20	41	52	40	647	439	160	169	81	56	110	128	65
21	38	47	197	581	412	151	166	89	85	105	101	101
22	31	33	94	501	391	166	163	113	55	105	123	96
23	32	67	58	562	370	145	160	123	59	115	125	85
24	34	68	44	661	401	136	151	125	52	91	113	77
25	19	68	40	614	790	133	157	113	53	91	110	63
26	30	68	35	555	756	128	160	110	44	103	110	69
27	41	69	33	507	640	77	142	105	49	75	94	81
28	40	61	31	461	661	120	148	89	77	71	81	65
29	26	47	33	407	.....	123	139	87	52	96	96	61
30	26	67	30	302	.....	115	142	103	49	98	103	69
31	21	.....	33	293	.....	110	.....	94	.....	77	85	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge relation affected by ice Feb. 6–28, 1913; Jan. 6 to Mar. 1, 1914; Dec. 11, 1914, to Jan. 20, 1915; and Jan. 31 to Feb. 17, 1915. Discharge for these periods based on gage-height record, discharge measurements, and climatic data.

Monthly discharge of Quaboag River at West Brimfield, Mass., for the years ending Sept. 30, 1912–1915.

[Drainage area, 150 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1912.						
August 19–31	74	25	52	0.347	0.17	A.
September	81	15	44	.293	.33	A.
1912-13.						
October	78	18	37	.247	.28	A.
November	140	38	70	.467	.52	A.
December	304	44	113	.753	.87	A.
January	354	226	276	1.84	2.12	A.
February	375	116	179	1.19	1.24	C.
March	920	209	459	3.06	3.53	A.
April	1,010	450	682	4.55	5.08	A.
May	412	116	244	1.63	1.88	A.
June	330	45	135	.900	1.00	A.
July	77	24	52.3	.349	.40	A.
August	70	11	40.0	.267	.31	A.
September	76	24	47.3	.315	.35	A.
The year	1,010	11	194	1.29	17.58	

Monthly discharge of Quaboag River at West Brimfield, Mass., for the years ending Sept. 30, 1912–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1913–14.						
October	265	33	90.8	0.605	0.70	A.
November	260	90	143	.953	1.06	A.
December	290	119	191	1.27	1.46	A.
January	391	73	147	.980	1.13	C.
February	293	94	175	1.17	1.22	D.
March	1,110	275	588	3.87	4.46	A.
April	777	495	640	4.27	4.76	A.
May	682	183	488	3.25	3.75	A.
June	163	55	106	.707	.79	A.
July	169	58	110	.733	.85	A.
August	103	43	68.8	.459	.53	A.
September	101	14	45.0	.300	.33	A.
The year	1,110	14	233	1.55	21.04	
1914–15.						
October	67	16	34.5	.230	.27	A.
November	69	13	42.6	.284	.32	A.
December	197	30	61.0	.407	.47	C.
January	1,020	18	528	3.52	4.06	C.
February	790	193	433	2.89	3.01	C.
March	620	77	245	1.63	1.88	A.
April	246	120	173	1.15	1.28	A.
May	148	81	115	.767	.88	A.
June	113	32	634	.423	.47	A.
July	254	71	124	.827	.95	A.
August	423	81	178	1.19	1.37	A.
September	101	37	72.3	.482	.54	A.
The year	1,020	13	171	1.14	15.50	

Days of deficiency in discharge of Quaboag River at West Brimfield, Mass., during the years ending Sept. 30, 1913–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.		
		1912–13	1913–14	1914–15
20	2.3	6	3	7
40	4.6	52	19	47
60	6.8	125	51	102
80	9.1	157	88	145
100	11.4	184	120	175
125	14.2	200	158	216
150	17.0	222	196	246
200	22.7	241	245	278
250	28.4	253	264	293
300	34.1	285	279	307
400	45.5	314	290	322
600	68.2	341	323	346
800	90.9	354	358	361
1,000	114	364	360	363
1,200	136	365	365	365

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

WESTFIELD RIVER BASIN.

GENERAL FEATURES.

Westfield River rises near Savoy Center, in the town of Savoy, at an elevation of 2,300 feet above sea level, flows southeasterly through the towns of Windsor, Plainfield, and Cummington to the village of Swift River, then southerly through Worthington, Chesterfield, and Huntington to the city of Huntington, whence its course is southeasterly through Montgomery, Blandford, Russell, and Westfield to its confluence with the Connecticut at Springfield. From its source to the gaging station at Knightville the distance is 30 miles. At Knightville the river is 500 feet above sea level, and the drainage area comprises 162 square miles. At Russell the elevation is 280 feet and the drainage area is 332 square miles. At the gaging station near Westfield the elevation is 110 feet and the drainage area 496 square miles. The length of the river from Savoy to its junction with the Connecticut is 55 miles, and the total drainage area is 515 square miles.

The principal tributaries of the Westfield are its Middle and West branches and Westfield Little River.

The Middle Branch of the Westfield heads among the hills of Peru, about 2,200 feet above sea level, and flows southeasterly through the towns of Middlefield, Worthington, and Chester to its junction with the main stream, about half a mile below the gaging station at Goss Heights. The distance from the source of this branch to the gaging station is about 17 miles, and the drainage area comprises 53 square miles. At Goss Heights the river is 415 feet above sea level; where it joins the main stream the elevation is 410 feet.

The West Branch of the Westfield rises in the town of Washington, 1,900 feet above sea level, and flows southeasterly 22 miles through Becket and Chester to Huntington, where it joins the main river. The drainage area at this point is 96 square miles. At the gaging station in Chester the river is 600 feet above sea level, and the drainage area comprises 73 square miles.

Westfield Little River is formed in the town of Russell by the union of Borden and Pebble brooks. Pebble Brook, the continuation of the main stream, rises in Blandford about 1,560 feet above sea level. The stream flows southeasterly to a point a mile southeast of Cobble Mountain, then northeastward 2 miles, then again southeastward to Westfield, where it unites with Westfield River. West of West Parish the basin of this tributary is hilly. Eastward the valley is more open. At the gaging station in the town of Russell, 3 miles below the confluence of Pebble and Borden brooks, the drainage area comprises 48 square miles. The water of this stream is used by the city of Springfield for municipal supply.

The country drained by the Westfield is very hilly and toward the headwaters is mountainous. Small tributaries are innumerable. The slopes are steep and rocky, and as there is but little storage the rainfall quickly finds its way into the main watercourses and produces rapid fluctuations in volume. Low water usually lasts from early in July to the last part of September. The spring rise comes in March or April, and at that time a large proportion of the yearly run-off occurs.

WESTFIELD RIVER AT KNIGHTVILLE, MASS.

LOCATION.—At the single-span steel highway bridge known locally as the Pitcher Bridge, at Knightville, 1 mile north of outlet of Norwich Lake and about 3 miles above confluence with Middle Branch of Westfield River.

DRAINAGE AREA.—162 square miles.

RECORDS AVAILABLE.—August 26, 1909, to September 30, 1915.

GAGE.—Chain attached to downstream side of bridge.

DISCHARGE MEASUREMENTS.—Made from bridge or by wading.

CHANNEL AND CONTROL.—Bed rough, covered with bowlders and ledge rock; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum open-water stage recorded: 8.9 feet, March 27, 1913; approximate discharge, 5,100 second-feet. A gage height of 9.4 feet was recorded at 9.15 a. m., January 22, 1910, but the channel was probably obstructed by ice at that time. Minimum stage recorded: 0.60 foot, August 10, 1913; discharge, 4 second-feet.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Flow not seriously affected by regulation.

ACCURACY.—Rating curve fairly well defined; open-water records good.

Discharge measurements of Westfield River at Knightville, Mass., during 1909–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*	1912.		*Feet.*	*Sec.-ft.*
Aug. 4	D. M. Wood	0.83	24.0	Feb. 7	Alexander McMillan	[a] 1.95	105
26	.....do	1.01	27.7	Nov. 19	C. S. De Golyer	2.13	250
Oct. 11	Norcross and Wood	1.15	37.3	19	.....do	2.13	247
1910.				1913.			
Mar. 3	T. W. Norcross	4.03	1,320	Feb. 14	C. S. De Golyer	[a] 2.30	137
24	D. M. Wood	3.90	1,120	Aug. 8	C. H. Pierce	.84	17.2
July 12	R. C. Rice	1.19	53.3	1914.			
Sept. 7	W. G. Hoyt	2.89	614	Aug. 14	C. H. Pierce	.99	23.9
Oct. 14	F. J. Shuttleworth	.99	28.7	1915.			
1911.				Mar. 2	R. S. Barnes	2.62	447
Mar. 10	F. J. Shuttleworth	[a] 2.05	101	Apr. 12	.....do	4.70	1,790
Apr. 14	W. G. Hoyt	3.32	873				
14	.....do	3.29	848				

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept
1909.			1909.			1909.		
1		25	11		32	21		26
2		23	12		61	22		26
3		23	13		30	23		31
4		21	14		38	24		52
5		26	15		39	25		151
6		22	16		33	26	28	95
7		23	17		42	27	28	610
8		26	18		39	28	26	373
9		29	19		30	29	29	169
10		26	20		25	30	30	106
						31	37	

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	88	48	55		255	1,920	1,120	310	445	101	46	8.0
2	80	48	55		238	1,440	985	238	373	84	37	22
3	77	67	53		238	1,310	920	201	272	71	32	20
4	74	74	53		255	1,380	730	183	238	63	41	79
5	73	60	55		207	1,990	495	201	201	60	61	330
6	76	60	53		176	1,780	420	174	920	61	55	350
7	58	48	74		153	1,570	395	141	550	63	38	670
8	45	48	77		148	1,850	395	238	420	46	37	373
9	55	48	71			1,180	350	445	350	37	34	125
10	67	48	76			1,440	350	350	470	37	42	77
11	74	60	77			1,240	291	255	1,310	39	74	63
12	82	60	66			1,050	272	291	790	46	54	42
13	74	60	77			920	272	255	420	41	48	33
14	60	60	238			730	238	272	350	38	46	39
15	59	60	272			670	238	610	272	37	41	35
16	47	60				640	238	310	291	37	38	37
17	48	82				550	238	222	445	34	28	35
18	56	82				373	350	201	495	32	30	25
19	54	74				350	670	179	373	32	53	23
20	54	74				373	373	192	291	33	46	21
21	58	60				1,180	310	174	238	33	37	19
22	82	60		5,130		1,050	272	207	183	32	23	20
23	82	60		2,880		985	255	183	148	41	23	16
24	58	60		2,280		1,050	238	174	129	37	22	16
25	58	58		1,500		1,710	238	183	125	33	25	35
26	82	55		1,180		1,920	2,280	207	108	32	26	44
27	76	54		1,180		1,310	1,640	189	110	32	13	37
28	76	54		855	2,130	1,440	1,380	198	108	28	16	35
29	61	55		670		1,310	790	174	108	30	14	39
30	60	58		470		1,240	445	207	104	38	14	39
31	48			330		1,120		445		49	13	

Daily discharge, in second-feet, of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915—Continued.

Day.	Oct.	Nov.	Dec.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910-11.										
1	31	19	95	.....	445	420	84	53	35	112
2	32	26	73	.....	330	730	70	48	28	94
3	22	310	.....	.....	580	523	68	44	25	77
4	22	855	.....	.....	640	470	80	39	23	74
5	21	730	.....	.....	730	445	116	28	20	63
6	19	395	.....	.....	1,180	395	204	25	19	68
7	23	60	.....	.....	1,920	222	855	32	19	58
8	32	41	.....	.....	1,240	222	790	30	18	73
9	32	68	.....	.....	790	192	445	28	17	95
10	27	90	.....	.....	640	238	174	28	17	108
11	25	56	.....	.....	550	207	179	27	16	141
12	22	90	.....	.....	470	169	189	27	16	116
13	24	84	.....	.....	550	204	1,640	25	15	94
14	28	74	.....	.....	730	183	920	23	14	66
15	26	71	.....	.....	985	158	395	25	14	56
16	26	63	.....	.....	670	153	272	23	108	84
17	22	77	.....	.....	670	131	134	33	82	74
18	23	68	.....	.....	580	104	108	58	63	68
19	19	68	.....	.....	580	94	99	55	58	64
20	15	77	.....	.....	640	207	90	53	52	59
21	16	101	.....	.....	580	166	85	50	41	53
22	30	76	.....	.....	523	143	79	30	26	55
23	33	84	.....	.....	470	127	76	26	22	50
24	29	94	.....	610	373	104	68	40	20	143
25	27	95	.....	523	350	106	71	53	32	134
26	23	84	.....	580	291	121	84	58	53	143
27	22	76	.....	373	495	121	88	52	77	53
28	19	80	.....	920	550	108	87	55	114	66
29	20	104	.....	238	445	94	85	60	420	84
30	19	114	.....	610	445	74	60	53	291	114
31	17	.....	.....	580	.....	67	.....	46	129	.....

Day.	Oct.	Nov.	Dec.	Jan.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911-12.											
1	179	420	330	320	.....	1,180	510	410	41	20	46
2	395	310	272	262	.....	1,500	410	342	41	20	73
3	291	310	255	228	.....	1,120	300	460	38	21	35
4	330	291	222	228	.....	735	262	365	28	25	27
5	291	272	134	210	.....	920	262	300	28	25	26
6	201	445	189	245	.....	985	365	245	28	27	29
7	195	350	183	320	.....	1,050	620	460	28	22	28
8	207	310	179	320	.....	1,640	510	320	28	19	37
9	192	291	181	.....	.....	1,310	460	245	28	13	33
10	166	272	189	.....	.....	1,310	410	186	25	22	35
11	148	272	222	.....	.....	1,050	510	180	25	77	32
12	136	272	222	.....	.....	855	342	175	25	116	35
13	116	670	222	.....	.....	855	510	169	23	71	35
14	103	550	201	.....	.....	675	262	148	32	50	37
15	101	495	291	.....	4,860	855	228	129	28	29	40
16	90	470	790	.....	2,580	1,500	300	127	25	22	60
17	90	445	1,120	.....	1,920	1,710	300	112	24	20	74
18	495	445	610	.....	1,710	1,780	262	101	25	88	63
19	2,720	445	291	.....	1,500	1,050	228	90	23	84	56
20	1,240	445	207	.....	1,240	735	210	84	22	84	53
21	790	420	201	.....	1,240	735	192	80	25	68	52
22	1,120	350	640	.....	1,120	920	855	79	28	84	52
23	1,240	207	1,310	.....	985	855	795	77	32	30	50
24	790	350	920	.....	675	795	460	74	26	25	50
25	550	523	625	.....	410	1,120	795	71	25	25	50
26	470	495	330	.....	388	855	228	68	24	39	46
27	395	445	580	.....	342	675	198	56	20	58	40
28	350	790	350	.....	245	675	175	48	20	38	35
29	330	580	238	.....	1,990	648	164	44	19	32	35
30	310	420	189	.....	1,850	592	985	41	16	26	40
31	291	.....	395	.....	1,380	.....	985	.....	17	23	.....

Daily discharge, in second-feet, of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	39	148	164	735	795	735	1,050	280	186	25	19	17
2	37	592	198	1,050	245	510	675	210	180	24	14	19
3	42	435	1,180	855	262	342	538	198	143	20	14	16
4	42	228	565	1,120	262	262	510	192	143	20	16	14
5	42	180	320	460	210	245	1,180	180	136	22	18	22
6	32	134	855	320	195	210	795	169	97	19	16	63
7	28	166	675	620	177	204	592	164	103	14	12	50
8	28	1,570	410	1,440	165	175	460	139	95	16	7	37
9	28	920	280	855	158	410	435	129	82	19	8	23
10	28	985	300	485	151	565	365	125	85	19	4	18
11	32	280	320	538	146	410	460	112	87	13	7	16
12	58	280	280	1,440	142	388	1,850	108	77	12	10	13
13	61	245	153	675	138	510	1,310	103	74	23	16	11
14	50	795	198	460	137	1,380	1,180	101	67	23	14	11
15	48	648	175	410	135	1,920	920	103	55	20	22	10
16	35	460	228	388	135	1,120	675	139	48	19	26	10
17	37	365	228	920	134	620	565	180	48	16	17	9
18	26	300	204	1,180	134	538	460	134	39	15	14	12
19	30	245	485	920	135	435	460	121	39	20	12	15
20	32	228	460	485	135	1,120	388	108	60	17	12	16
21	26	228	320	920	137	985	342	94	90	19	13	25
22	35	210	192	538	140	795	365	101	71	18	16	300
23	90	201	201	410	142	620	342	245	60	16	16	320
24	2,130	195	201	538	145	675	280	1,120	50	15	15	116
25	1,120	565	204	388	148	735	280	485	41	15	13	80
26	675	365	210	320	153	1,920	262	280	41	13	12	61
27	388	280	410	342	160	3,440	245	210	42	20	12	39
28	210	228	410	300	920	1,990	300	280	41	26	13	30
29	210	175	365	245	.....	1,240	538	1,050	35	49	22	26
30	195	198	365	300	.....	855	388	460	25	44	44	23
31	141	.....	1,240	280	.....	1,440	.....	280	.....	32	33	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	30	164	280	150	1,500	240	1,240	920	95	58	22	55
2	56	156	342	150	1,000	1,710	2,350	675	87	106	20	44
3	94	141	365	300	600	1,240	1,440	620	84	116	16	39
4	84	131	435	275	600	920	1,120	510	134	97	19	32
5	68	125	388	250	600	675	920	795	226	68	24	31
6	50	125	300	200	500	565	920	1,310	139	80	20	24
7	37	121	920	250	400	435	1,120	735	94	108	22	19
8	38	125	795	200	250	388	1,310	648	84	121	20	20
9	37	1,570	510	200	200	365	2,280	538	77	112	17	17
10	39	1,710	365	200	150	320	1,440	485	71	88	12	14
11	38	855	342	100	125	300	1,310	410	68	84	13	16
12	74	510	300	150	75	280	1,440	460	60	77	41	20
13	121	410	280	100	60	300	1,380	1,780	55	74	39	17
14	87	388	320	150	100	320	1,180	920	45	58	28	14
15	70	320	342	200	150	280	1,050	675	37	48	25	13
16	52	320	280	200	200	365	1,050	538	66	35	17	17
17	48	300	262	200	200	563	920	460	60	30	14	14
18	38	280	245	175	200	735	1,310	410	53	46	17	14
19	33	280	198	150	250	485	1,710	365	48	35	30	14
20	74	565	180	125	250	435	1,710	300	63	32	52	14
21	280	410	210	150	250	365	1,570	245	63	32	58	13
22	101	320	210	125	250	320	1,180	245	48	30	300	13
23	71	280	207	100	200	320	920	228	46	33	94	12
24	71	245	280	125	200	320	735	207	48	28	58	12
25	320	245	300	600	150	320	675	166	39	28	53	14
26	1,310	228	280	1,000	150	648	1,240	180	39	26	25	14
27	1,310	228	204	1,200	125	2,130	1,440	172	32	25	25	12
28	538	228	153	1,200	150	3,840	1,120	151	42	25	25	12
29	365	342	200	1,200	.....	1,780	985	125	48	22	226	11
30	280	320	180	1,200	.....	1,240	1,120	118	63	26	245	12
31	210	.....	170	1 500	.....	1,050	.....	108	.....	23	84	.....

Daily discharge, in second-feet, of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	12	18	120	110	130	373	166	395	68	97	116	222
2	12	20	80	80	250	373	198	330	73	291	121	183
3	13	20	125	70	200	330	222	272	63	395	255	161
4	14	20	112	60	180	310	350	207	56	255	3,040	141
5	13	17	90	55	160	291	183	207	52	169	1,920	129
6	14	18	63	50	250	291	172	222	55	207	985	118
7	14	20	48	600	640	272	523	207	61	139	920	118
8	12	20	192	580	495	395	523	207	61	1,640	495	116
9	14	19	92	373	350	291	610	222	61	1,920	395	108
10	14	23	71	272	272	291	640	183	46	730	610	101
11	15	20	48	330	255	255	1,780	158	44	350	373	92
12	12	23	32	395	222	238	1,920	146	37	445	291	80
13	13	22	24	640	255	195	1,050	134	35	395	395	82
14	14	19	105	470	255	222	640	134	34	272	291	172
15	13	30	90	255	222	222	550	121	40	181	207	151
16	18	169	80	255	1,500	195	445	104	63	148	222	99
17	49	153	60	195	790	192	395	116	84	136	207	90
18	74	97	60	523	420	183	350	129	87	129	166	85
19	63	99	55	1,990	330	164	330	121	73	129	146	74
20	58	90	35	985	272	198	310	110	92	1,240	139	68
21	44	45	50	373	272	222	272	103	104	373	116	179
22	38	60	65	291	272	195	255	255	73	550	445	445
23	28	70	35	291	291	238	238	201	66	350	1,180	183
24	23	70	30	495	670	272	238	156	61	238	470	127
25	20	55	20	373	3,920	310	222	125	46	179	445	108
26	19	70	15	291	1,850	470	201	121	68	158	330	108
27	20	65	15	255	985	272	201	129	53	174	222	238
28	23	75	15	222	580	272	183	112	67	174	192	146
29	17	95	50	174	.....	222	201	94	55	192	207	112
30	16	110	125	150	.....	156	272	88	48	179	238	101
31	13	.....	120	120	.....	164	.....	74	.....	139	291	.....

NOTE.—Discharge determined from a fairly well defined rating curve. Discharge relation affected by ice Dec. 16, 1909 to Jan. 21, 1910; Feb. 9–27, 1910; Dec. 3, 1910 to Mar. 23, 1911; Jan. 9 to Mar. 14, 1912; Feb. 8–27, 1913; Dec. 29, 1913, to Mar. 1, 1914; Nov. 21 to Dec. 2, 1914; Dec. 14, 1914 to Jan. 7, 1915; and Jan. 30 to Feb. 6, 1915. Estimates Feb. 8–27, 1913; Dec. 29, 1913, to Mar. 1, 1914; Nov. 21 to Dec. 2, 1914; Dec. 14, 1914, to Jan. 7, 1915; and Jan. 30 to Feb. 6, 1915, based on comparison with records at other stations in the Westfield River basin.

Monthly discharge of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915.

[Drainage area, 162 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1909.						
August 26–31	7	26	29.7	0.183	0.04	C.
September	610	21	75.1	.464	.52	B.
1909-10.						
October	88	45	65.9	.407	.47	B.
November	82	48	59.8	.369	.41	B.
December	272	53	[a] 107	.660	.76	C.
January	5,130	.....	[a] 573	3.54	4.08	C.
February	2,130	.....	[a] 258	1.59	1.66	D.
March	1,990	350	1,200	7.41	8.54	B.
April	2,280	238	573	3.54	3.95	B.
May	610	141	245	1.51	1.74	B.
June	1,310	104	355	2.19	2.44	B.
July	101	28	44.4	.274	.32	C.
August	74	13	35.7	.220	.25	C.
September	670	8	90.2	.557	.62	B.
The year	5,130	8	301	1.86	25.24	

Monthly discharge of Westfield River at Knightville, Mass., for the years ending Sept. 30, 1909–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1910–11.						
October	33	15	24.1	0.149	0.17	C.
November	855	19	141	.871	.97	B.
December	.....	.....	[a] 85.7	.529	.61	D.
January	.....	.....	[a] 201	1.24	1.43	D.
February	.....	.....	[a] 74.1	.457	.48	D.
March	920	.....	[a] 259	1.60	1.84	C.
April	1,920	291	648	4.00	4.46	B.
May	730	67	216	1.33	1.53	B.
June	1,640	60	256	1.58	1.76	B.
July	60	23	39.6	.245	.28	C.
August	420	14	60.8	.375	.43	B.
September	143	50	84.6	.522	.58	B.
The year	1,920	14	174	1.07	14.54	
1911–12.						
October	2,720	90	462	2.85	3.29	B.
November	790	207	412	2.54	2.83	B.
December	1,310	134	390	2.41	2.78	B.
January	.....	.....	[a] 261	1.61	1.86	C.
February	675	.....	[a] 272	1.68	1.81	C.
March	4,860	245	[a] 1,020	6.30	7.26	C.
April	1,780	592	1,020	6.30	7.03	B.
May	985	164	422	2.60	3.00	B.
June	460	41	176	1.09	1.22	B.
July	41	16	26.4	.163	.19	C.
August	116	13	42.0	.259	.30	B.
September	73	26	43.5	.269	.30	B.
The year	4,860	13	379	2.34	31.87	
1912–13.						
October	2,130	26	193	1.19	1.37	B.
November	1,570	134	395	2.44	2.72	B.
December	1,240	153	381	2.35	2.71	B.
January	1,440	245	643	3.97	4.58	B.
February	920	134	212	1.31	1.36	D.
March	3,440	175	864	5.33	6.14	C.
April	1,850	245	607	3.75	4.18	B.
May	1,120	94	245	1.51	1.74	B.
June	186	25	78.0	.482	.54	B.
July	49	12	20.7	.128	.15	C.
August	44	4	15.7	.097	.11	C.
September	320	9	47.4	.293	.33	B.
The year	3,440	4	310	1.91	25.93	
1913–14.						
October	1,310	30	194	1.20	1.38	B.
November	1,710	121	381	2.35	2.62	B.
December	920	153	317	1.96	2.26	B.
January	1,500	100	391	2.41	2.78	D.
February	1,500	60	317	1.96	2.04	D.
March	3,840	240	750	4.63	5.34	C.
April	2,350	675	1,270	7.84	8.75	C.
May	1,780	108	500	3.09	3.56	B.
June	226	32	70.5	.435	.49	B.
July	121	22	57.1	.352	.41	B.
August	300	12	53.6	.331	.38	B.
September	55	11	19.1	.118	.13	C.
The year	3,840	11	360	2.22	30.14	
1914–15.						
October	74	12	23.3	.144	.17	C.
November	169	17	54.4	.336	.37	B.
December	192	15	68.5	.423	.49	B.
January	1,990	50	365	2.25	2.59	B.
February	3,920	130	582	3.59	3.74	B.
March	470	156	260	1.60	1.84	A.
April	1,920	166	455	2.81	3.14	A.
May	395	74	167	1.03	1.19	A.
June	104	34	60.9	.376	.42	B.
July	1,920	97	386	2.38	2.74	A.
August	3,040	116	498	3.07	3.54	A.
September	445	68	138	.852	.95	A.
The year	3,920	12	253	1.56	21.18	

[a] Mean discharge estimated, on account of ice, by comparison with records of other stations.

Days of deficiency in discharge of Westfield River at Knightville, Mass., during the years ending Sept. 30, 1910–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.					
		1909–10	1910–11	1911–12	1912–13	1913–14	1914–15
10	1.1	1	.....	.....	5	.....	.....
15	1.7	5	2		29	20	15
20	2.3	9	18	5	58	30	28
30	3.4	22	56	47	84	53	44
40	4.6	59	76	64	101	77	53
50	5.7	89	84	74	114	89	63
100	11.4	188	215	105	137	134	128
150	17.0	219	262	123	173	161	177
200	22.7	233	283	159	201	184	218
300	34.1	275	305	211	244	235	291
400	45.5	299	315	248	272	273	319
600	68.2	315	341	298	310	292	338
800	90.9	325	355	321	327	311	348
1,000	114	331	361	335	339	321	352
1,500	170	351	363	353	356	351	355
2,500	284	363	365	363	364	364	363
4,000	455	364	.....	365	365	365	365
5,500	625	365	.....	366	.....	.....	.....

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amount given in the columns for discharge and horsepower. In using this table allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss which may be as large as 5 per cent.

WESTFIELD RIVER AT RUSSELL, MASS.

LOCATION.—At steel highway bridge just west of the railroad station at Russell.

DRAINAGE AREA.—332 square miles.

RECORDS AVAILABLE.—April 1, 1904, to December 16, 1905.

GAGE.—Chain attached to upstream side of bridge.

DISCHARGE MEASUREMENTS.—Made from the bridge or by wading.

CHANNEL AND CONTROL.—Bed composed of gravel and small bowlders; section rough; position and condition of control uncertain.

EXTREMES OF STAGE.—Maximum stage recorded: 9.3 feet, 6 p. m., September 4, 1905. Minimum stage recorded: 0.45 foot, 7 a. m., July 24, 1905.

WINTER FLOW.—Discharge relation affected by ice; gage not read during winter months.

ACCURACY.—Rating curve not developed and discharge not determined. Gage heights are means of two readings a day.

Discharge measurements of Westfield River at Russell, Mass., during 1904–5.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1904.		*Feet.*	*Sec.-ft.*	1905.		*Feet.*	*Sec.-ft.*
Apr. 2	Grover and Clapp	3.37	4,990	Apr. 5	T. W. Norcross	2.81	2,680
27	S. K. Clapp	1.72	1,330	15	.....do	2.12	1,590
June 3	.....do	1.10	531	25	.....do	1.32	735
22	.....do	.98	353	May 19	.....do	1.20	480
July 29	.....do	.85	374	July 15	Barrows and Norcross	.75	167
30	.....do	.90	210				
Aug. 18	.....do	.90	224				
Sept. 16	Barrows and Norcross	1.95	1,030				
Oct. 4	T. W. Norcross	.99	249				
26	.....do	1.30	540				
Nov. 29	.....do	*a* .99	196				

a Discharge relation affected by ice.

Daily gage height, in feet, of Westfield River at Russell, Mass., for the years ending Sept. 30, 1904–1906.

Day.	Apr.	May.	June.	July.	Aug.	Sept.	Day.	Apr.	May.	June.	July.	Aug.	Sept.
1904.							1904.						
1	2.8	2.15	1.1	2.2	0.8	0.9	16	1.8	1.9	1.2	0.9	1.0	2.0
2	3.65	1.9	1.1	1.75	.9	.9	17	1.75	1.65	1.15	.9	.9	1.4
3	2.75	1.8	1.1	1.4	.85	.85	18	1.9	1.5	1.1	1.2	.9	1.2
4	2.2	1.7	1.05	1.2	.8	.8	19	2.0	1.85	1.05	1.05	.85	1.1
5	2.2	1.6	1.2	1.1	.8	.8	20	1.8	2.3	1.05	.9	1.2	1.05
6	2.45	1.55	1.6	1.4	.8	.8	21	1.7	1.75	1.0	.9	2.0	1.0
7	2.65	1.5	3.6	1.15	.7	.7	22	1.65	1.45	1.0	.7	1.3	1.0
8	2.7	1.4	2.15	1.0	.7	.8	23	1.65	1.35	1.0	.8	1.1	.95
9	3.2	1.5	4.15	.95	.8	.8	24	1.65	1.3	1.0	.9	1.0	1.0
10	3.3	1.7	2.45	.9	.8	.8	25	1.8	1.2	.95	1.0	.95	1.0
11	2.65	1.6	1.9	.95	2.55	.85	26	1.8	1.7	1.0	1.0	.9	1.05
12	2.4	1.45	1.65	.95	1.4	.8	27	1.85	1.5	.95	1.0	.9	1.0
13	2.2	1.3	1.45	1.05	1.1	.8	28	3.3	1.3	.95	1.0	.8	1.0
14	1.95	1.25	1.35	1.05	1.0	.8	29	3.5	1.2	1.0	.95	.8	1.0
15	1.8	1.2	1.3	.95	1.1	4.2	30	2.55	1.15	1.35	.9	.8	1.55
							31	.....	1.15	.....	.8	.8	.....

Day.	Oct.	Nov.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.									
1	1.3	1.1	.....	3.9	1.3	0.8	0.8	1.3	1.2
2	1.1	1.05	.....	2.9	1.25	.8	.75	1.0	1.0
3	1.0	1.05	.....	2.3	1.2	.85	.7	.9	4.4
4	.95	1.1	.....	2.25	1.15	.8	.7	.8	6.5
5	.9	1.1	.....	2.85	1.1	.8	.6	.8	3.05
6	.9	1.1	.....	4.3	1.1	.85	.7	.6	2.0
7	.9	1.05	.....	2.7	1.1	1.1	.7	.7	1.55
8	.85	1.0	.....	2.3	1.1	1.05	.7	.85	1.4
9	.8	1.0	.....	2.2	1.05	.9	.6	.8	1.2
10	.85	1.0	.....	2.3	1.1	.85	.6	.7	1.1
11	.9	1.0	.....	2.9	1.0	.8	.7	.7	1.1
12	1.0	1.0	.....	3.05	1.1	.8	.95	1.1	2.3
13	1.15	.95	.....	2.3	1.1	.9	.8	1.05	2.35
14	1.2	1.0	.....	2.15	1.15	.9	.8	.9	1.55
15	1.1	1.05	.....	2.1	1.25	.9	.6	.9	1.35
16	1.0	1.1	.....	1.9	1.45	.9	.6	1.4	1.3
17	.95	1.05	.....	1.8	1.4	.8	.6	1.5	1.3
18	.9	.95	.....	1.65	1.3	.75	.6	1.1	1.4
19	.9	1.0	4.0	1.6	1.2	.7	.6	.9	1.75
20	.9	1.1	3.25	1.55	1.1	.95	.7	.8	1.4
21	3.4	1.25	2.25	1.8	1.0	.95	.6	.8	1.6
22	2.45	1.3	2.1	1.75	1.0	1.85	.6	.85	1.4
23	1.7	1.2	2.0	1.5	1.0	1.65	.6	.8	1.2
24	1.4	1.2	1.8	1.4	.95	1.15	.5	.85	1.1
25	1.3	1.15	3.1	1.35	.9	.95	.55	.8	1.1
26	1.2	1.05	3.5	1.3	.9	.9	.7	1.0	1.0
27	1.2	.95	4.4	1.3	.9	1.0	.65	.85	.9
28	1.2	.....	3.95	1.35	.85	.9	.6	.85	.95
29	1.15	.....	4.1	1.3	.8	.8	.6	.9	.9
30	1.1	.....	4.45	1.3	.85	.8	2.2	.9	.85
31	1.1	.....	4.5	.....	.8	.....	1.85	1.3	.....

Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.	Day.	Oct.	Nov.	Dec.
1905.				1905.				1905.			
1	0.85	0.95	1.5	11	.8	1.1	1.6	21	1.7	1.4	.....
2	.9	1.0	1.3	12	1.9	1.05	1.9	22	1.3	1.4	.....
3	.9	.95	.....	13	1.5	1.0	1.3	23	1.2	1.0	.....
4	1.0	1.05	.....	14	1.2	1.0	1.1	24	1.1	1.0	.....
5	.95	1.1	.....	15	1.1	.9	1.05	25	1.0	1.0	.....
6	.9	1.1	.....	16	1.1	1.0	1.25	26	1.0	1.0	.....
7	.8	1.65	1.5	17	1.0	1.05	.....	27	1.0	1.0	.....
8	.85	1.4	1.55	18	.95	1.0	.....	28	1.0	1.0	.....
9	.8	1.25	1.4	19	1.1	1.0	.....	29	.95	1.3	.....
10	.8	1.1	1.4	20	1.8	1.4	.....	30	1.0	2.95	.....
								31	.95	.....	.....

NOTE.—Discharge relation affected by ice Nov. 28, 1904, to Mar. 20, 1905, and Dec. 17–31, 1905.

WESTFIELD RIVER NEAR WESTFIELD, MASS.

LOCATION.—At point known locally as Trap Rock Crossing, about 3 miles east of Westfield and 2 miles below mouth of Westfield Little River. Great Brook enters about a mile above station.

DRAINAGE AREA.—496 square miles.

RECORDS AVAILABLE.—June 27, 1914, to September 30, 1915.

GAGES.—Stevens water-stage recorder on right bank; referred to gage datum by a hook gage inside the well; inclined staff used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from cable or by wading.

CHANNEL AND CONTROL.—Bed of gravel. Control at low and medium stages is about 200 feet below gage, practically permanent; at high stages probably the crest of the dam at Mittineague, 3 miles below station.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 17.4 feet at 11.30 p. m. August 4, 1915; approximate discharge, determined from an extension of the rating curve, 17,400 second-feet. Minimum stage recorded: 3.02 feet, September 24, 1914; discharge, 46 second-feet.

WINTER FLOW.—Discharge relation affected by ice.

DIVERSIONS.—Water is diverted from Westfield Little River for municipal supply of Springfield. The amount of diversion is added in the table of monthly discharge to give total flow of Westfield River.

REGULATION.—Several power plants above station cause some diurnal fluctuation of flow. Nearest dam is at Westfield.

ACCURACY.—Records good.

Discharge measurements at Westfield River near Westfield, Mass., during 1914–15.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1914.		*Feet.*	*Sec.-ft.*	1915.		*Feet.*	*Sec.-ft.*
June 27	R. S. Barnes	3.48	184	Jan. 20	R. S. Barnes	7.34	2,950
July 22	do	3.37	165	20	do	7.12	2,670
Aug. 19	C. H. Pierce	3.22	117	21	do	5.59	1,360
Sept. 7	R. S. Barnes	3.17	122	22	do	4.99	1,040
24	C. H. Pierce	3.10	67	Feb. 4	do	[a] 4.46	566
Dec. 16	R. S. Barnes	[a] 3.55	182	Apr. 11	do	7.94	3,620
1915.				13	do	6.94	2,540
Jan. 7	do	[a] 5.22	393	15	do	5.54	1,270
19	C. H. Pierce	10.39	6,810	Aug. 16	Hardin Thweatt	4.28	573

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Westfield River near Westfield, Mass., for the years ending Sept. 30, 1914–15.

Day.	June.	July.	Aug.	Sept.	Day.	June.	July.	Aug.	Sept.
1914.					1914.				
1		212	168	300	16		164	232	60
2		352	144	200	17		152	144	80
3		296	126	175	18		208	119	75
4		220	126	125	19		136	133	75
5		180	212	115	20		126	204	70
6		252	119	112	21		122	300	70
7		316	119	84	22		140	300	65
8		495	133	80	23		160	1,000	70
9		380	208	80	24		264	500	77
10		244	152	75	25		192	300	77
11		152	119	70	26		160	200	70
12		140	119	75	27	212	176	150	77
13		168	140	80	28	180	192	125	77
14		188	164	75	29	216	192	100	64
15		204	144	70	30	228	156	500	64
					31		129	600	

Daily discharge, in second-feet, of Westfield River near Westfield, Mass., for the years ending Sept. 30, 1914–15—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	61	188	352	340	372	1,260	505	1,300	352	328	268	660
2	61	94	216	260	690	1,080	510	1,020	376	280	296	525
3	64	84	336	220	605	960	535	900	252	780	475	475
4	80	108	296	180	530	750	530	780	228	660	4,500	425
5	84	101	320	160	475	810	620	690	200	515	7,550	324
6	67	160	228	140	630	840	840	690	105	610	2,500	324
7	67	140	244	1,790	1,550	780	1,220	600	168	490	1,910	385
8	84	152	304	990	1,220	840	1,190	630	248	870	1,400	320
9	70	84	192	430	840	810	1,300	750	208	8,200	1,020	324
10	70	70	212	212	660	750	1,470	636	184	2,030	1,120	316
11	80	70	200	188	510	720	3,660	550	176	1,120	900	300
12	70	70	208	336	520	690	5,440	510	168	1,080	720	280
13	87	80	204	2,030	545	605	2,500	420	144	1,160	810	272
14	98	136	304	1,080	505	636	1,670	410	136	810	840	316
15	87	77	276	690	720	648	1,330	390	204	625	666	296
16	101	340	240	480	4,140	600	1,190	348	204	520	605	328
17	148	550	180	455	2,160	607	1,080	415	200	440	595	319
18	140	385	180	2,300	1,360	614	990	415	348	364	525	310
19	212	348	184	6,000	1,020	621	930	425	368	405	465	301
20	260	224	108	3,100	930	628	900	415	308	900	420	292
21	248	129	144	1,510	900	634	810	332	364	750	368	282
22	248	184	200	960	930	640	750	540	405	750	520	272
23	133	208	108	720	1,020	647	720	750	272	810	1,870	263
24	119	208	88	1,550	1,710	654	684	620	248	540	1,050	254
25	112	160	49	1,220	14,500	750	654	520	129	420	900	245
26	129	220	46	960	5,040	930	642	485	140	435	900	236
27	94	200	43	780	2,210	648	600	445	196	372	654	332
28	91	224	40	720	1,590	580	570	445	208	376	545	376
29	108	284	40	590	.....	615	565	405	228	440	485	320
30	115	336	430	455	.....	500	810	292	192	385	636	288
31	126	.....	405	360	.....	475	.....	188	.....	356	900	.....

NOTE.—Discharge determined from a well-defined rating curve. Discharge relation affected by ice Dec. 16, 1914, to Jan. 18, 1915, and Feb. 1–14, 1915; estimates based on gage heights, discharge measurements, and climatic records. Discharge estimated Aug. 22 to Sept. 5, Sept. 8–22, 1914; Mar. 17–23 and Sept. 17–25, 1915; by comparison with records at other stations in Westfield River basin.

Monthly discharge of Westfield River near Westfield, Mass., for the years ending Sept. 30, 1914–15.

[Drainage area, 496 square miles.]

Month.	Observed discharge in second-feet.			Diversion from Westfield Little River, in million gallons.	Total discharge in second-feet.		Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.		Mean.	Per square mile.		
1914.								
July	495	122	209	368.4	227	0.458	0.53	B.
August	1,000	100	229	345.3	246	.496	.57	B.
September	300	60	92.9	359.9	111	.224	.25	C.
1914-15.								
October	260	61	113	341.0	130	.262	.30	B.
November	550	70	187	311.8	203	.409	.46	B.
December	352	40	206	341.7	223	.449	.52	C.
January	6,000	140	1,010	327.4	1,030	2.08	2.40	C.
February	14,500	372	1,710	282.9	1,730	3.49	3.63	C.
March	1,260	475	720	325.2	736	1.48	1.71	A.
April	5,440	505	1,170	319.6	1,190	2.40	2.68	A.
May	1,300	188	559	324.6	576	1.16	1.34	A.
June	405	105	232	337.1	250	.504	.56	B.
July	8,200	280	897	344.9	914	1.84	2.12	A.
August	7,550	268	1,170	324.6	1,190	2.40	2.77	A.
September	660	236	332	328.7	349	.704	.79	A.
The year.	14,500	40	687	3,910	704	1.42	19.28	

NOTE.—The effect of storage in Borden Brook reservoir not taken into account in computing the total discharge.

MIDDLE BRANCH OF WESTFIELD RIVER AT GOSS HEIGHTS, MASS.

LOCATION.—At a single-span highway bridge in Goss Heights, about 1½ miles above the village of Huntington, and one-half mile above the mouth of the Middle Branch.

DRAINAGE AREA.—53 square miles.

RECORDS AVAILABLE.—July 14, 1910, to September 30, 1915.

GAGES.—July 14, 1910, to September 7, 1912, chain attached to upstream side of the bridge. September 8, 1912, to September 30, 1915, Barrett & Lawrence water-stage recorder on upstream abutment on right bank; water-stage recorder is referred to gage datum by means of a hook gage inside the well; an outside staff gage is used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from the bridge or by wading.

CHANNEL AND CONTROL.—Bed of coarse gravel and bowlders; control practically permanent.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 7.33 feet, July 8, 1915; approximate discharge, 4,500 second-feet. Minimum stage recorded: 0.70 foot, 6. p. m. October 26, to 10 a. m. October 27, 1914; discharge practically zero.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Flow somewhat affected by operation of a small power plant about 2 miles above station.

ACCURACY.—Records good since water-stage recorder was installed.

Discharge measurements of Middle Branch of Westfield River at Goss Heights, Mass., during 1910–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1910.		*Feet.*	*Sec.-ft.*	1913.		*Feet.*	*Sec.-ft.*
July 14	T. W. Norcross	1.03	8.6	Feb. 14	R. S. Barnes	[a] 1.84	46.7
23	H. B. Alvord	1.00	3.7	Mar. 26	O. W. Hartwell	3.64	1,140
Sept. 7	W. G. Hoyt	1.54	114	Aug. 8	C. H. Pierce	.92	3.4
8	....do	1.32	57.7	Sept. 6	....do	1.09	12.4
Oct. 14	F. J. Shuttleworth	1.02	5.1	6	....do	1.09	11.2
14	....do	1.02	4.4	1914.			
1911.				Jan. 2	R. S. Barnes	[a] 1.62	45.1
Mar. 10	C. S. De Golyer	[a] 1.89	27.2	12	....do	[a] 1.58	45.3
Apr. 14	W. G. Hoyt	2.10	265	23	....do	[a] 1.99	33.8
1912.				Feb. 10	....do	[a] 2.66	58
Feb. 8	G. H. Canfield	[a] 2.54	35.3	26	....do	[a] 2.53	36.1
May 22	G. K. Larrison	1.96	256	Apr. 3	C. H. Pierce	2.52	440
Sept. 7	G. H. Canfield	1.12	13.1	3	....do	2.52	428
8	....do	1.11	12.7	7	R. S. Barnes	2.00	221
9	....do	1.04	6.8	May 25	....do	1.37	52
Oct. 29	J. G. Mathers	1.42	63.1	Aug. 13	C. H. Pierce	.98	5.6
29	....do	1.41	59.4	Dec. 16	R. S. Barnes	[a] 1.40	51.3
Nov. 20	C. S. De Golyer	1.47	74.2	1915.			
20	....do	1.46	66.2	Jan. 8	R. S. Barnes	[a] 2.86	116
Dec. 19	....do	1.98	243	Feb. 1	....do	[a] 1.79	62
1913.				Mar. 2	....do	[a] 1.94	116
Jan. 7	C. S. De Golyer	1.88	208	Apr. 12	....do	2.92	657
Feb. 10	....do	[a] 1.64	55				

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915.

Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.	Day.	July.	Aug.	Sept.
1910.				1910.				1910.			
1	.....	7.8	8.6	11	.....	23	13	21	8.6	7.8	.....
2	.....	10	8.6	12	.....	23	11	22	10	5.2	.....
3	.....	7.8	0	13	.....	12	7.8	23	7.8	5.2	.....
4	.....	7.8	68	14	5.2	11	6.9	24	6.9	8.6	.....
5	.....	23	113	15	6.9	14	6.9	25	7.8	6.9	.....
6	.....	16	94	16	8.6	10	6.9	26	5.2	4.4	7.8
7	.....	11	196	17	6.9	7.8	4.4	27	6.9	7.8	6.9
8	.....	8.6	122	18	7.8	7.8	5.2	28	8.6	8.6	13
9	.....	8.6	48	19	5.2	26	4.4	29	12	7.8	8.6
10	.....	7.8	30	20	7.8	29	4.4	30	10	7.8	4.4
								31	8.6	7.8	.....

Daily discharge, in second-feet, of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910-11.												
1	6.9	6.9	21				152	135	66	14	11	42
2	4.4	8.6	24				132	212	49	12	12	53
3		48	29				110	170	30	10	13	29
4		138					96	138	24	7.8	11	24
5		322					110	113	21	6.9	10	16
6	4.4	212					1,030	102	66	13	8.6	24
7	10	68					860	83	336	12	7.8	18
8	6.9	48					535	62	192	11	10	13
9	7.8	42					300	71	91	7.8	8.6	16
10	8.6	26					255	71	110	6.9	7.8	85
11	6.9	59					238	68	75	5.2	5.2	91
12	4.4	42					196	59	96	3.5	3.5	78
13	6.9	40					221	66	435	11		75
14	4.4	30					300	62	234	7.8		57
15	6.9	30					585	59	135	13		46
16	5.2	22					322	66	71	8.6	48	59
17	6.9	24					221	42	66	10	16	48
18	3.5	23					177	40	48	30	13	26
19		32					177	91	40	14	11	22
20		55					216	126	40	16	5.2	19
21		68					189	102	36	12	6.9	16
22	11	36					221	66	24	19	11	13
23	14	30					212	55	30	16	13	24
24	12	35					170	53	24	23	12	22
25	13	26					142	53	24	21	12	14
26	10	35					142	68	29	19	26	30
27	6.9	29				1,270	132	49	42	16	46	30
28	5.2	35				1,210	142	40	40	13	62	35
29	11	46				585	177	42	36	21	85	30
30	12	30				668	170	35	22	18	94	46
31	13					255		30		13	75	
1911-12.												
1	53	119	104	138			435	181	48	6.9	7.8	7.8
2	196	110	96	107			435	166	23	5.2	5.2	196
3	181	96	102	94			750	138	300	4.4	12	132
4	142	59	83				560	135	192	4.4	14	75
5	135	55	83				485	107	48	3.5	12	30
6	119	48	91				535	181	48	3.2	5.2	23
7	166	278	104				585	212	42	3.2	5.2	21
8	173	196	104				560	204	38	3.2	.5	20
9	110	173	110				535	212	62	3.5	.5	20
10	83	145	96				390	192	57	3.2	.4	8.9
11	71	110	83				345	177	53	2.9	16	7.8
12	59	83	80				300	135	46	3.5	7.8	8.4
13	49	152	78				255	122	40	10	7.8	7.5
14	36	138	78			300	246	113	36	16	7.8	7.5
15	29	177	102			1,150	238	221	35	14	4.4	6.9
16	24	177	156			1,690	234	204	30	11	3.5	13
17	24	177	345			920	585	192	38	.5	3.2	15
18	59	159	204			668	535	322	29	.5	2.9	10
19	1,760	300	142			640	535	300	24	12	18	8.9
20	560	216	96			585	390	234	23	10	16	8.6
21	485	156	113			585	221	173	21	3.5	46	8.2
22	980	142	107			560	196	345	21	12	23	6.9
23	1,090	110	560			535	177	300	18	7.8	12	8.0
24	920	126	322			435	156	212	14	5.2	23	7.9
25	695	208	196			322	138	145	14	3.5	12	7.9
26	189	145	142			216	126	122	12	3.5	12	8.0
27	145	138	212			278	113	107	12	2.9	10	7.0
28	75	113	208			159	142	83	11	.5	12	7.2
29	83	102	177			668	135	71	11	.3	6.9	8.0
30	75	96	152			640	181	57	7.8	.0	12	8.0
31	83		142			485		53		3.5	11	

Daily discharge, in second-feet, of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912-13.												
1	10	46	60	228	138	220	330	59	77	8.9	7.9	7.9
2	9	119	107	170	70	175	204	47	67	8.9	6.9	7.4
3	9	89	418	343	67	125	176	38	57	9.4	6.0	6.9
4	10	65	175	348	64	85	161	39	55	7.4	5.2	6.4
5	10	47	130	188	62	75	290	36	49	7.9	4.8	11
6	8	43	261	143	59	70	221	33	36	6.4	4.0	11
7	7	50	187	164	57	70	173	30	36	6.4	3.6	8.9
8	7	600	138	519	54	60	143	24	38	6.4	3.2	7.9
9	7	350	106	263	52	125	127	20	29	5.6	3.2	6.4
10	7	400	110	167	49	175	109	30	23	5.6	2.9	6.0
11	8	100	85	164	47	140	361	33	23	5.2	2.6	5.6
12	20	100	78	384	44	120	892	30	21	5.6	2.3	6.0
13	25	90	108	221	42	130	436	29	19	4.8	1.6	5.2
14	16	260	132	149	39	456	384	29	18	4.8	3.2	2.9
15	15	214	116	127	38	599	260	26	15	4.4	4.8	3.2
16	10	130	102	119	38	388	406	36	15	4.4	3.6	3.2
17	11	106	76	218	38	176	167	41	13	4.4	2.9	3.6
18	7	96	59	278	39	127	149	39	12	4.4	3.6	4.0
19	8	84	151	214	40	112	135	36	13	4.0	2.0	4.0
20	9	70	141	138	42	204	122	27	17	4.0	2.0	4.4
21	8	66	102	194	44	260	107	26	24	3.6	2.0	6
22	10	62	87	130	48	173	102	30	19	3.6	2.0	75
23	30	58	112	124	52	124	97	72	15	3.6	2.6	59
24	500	83	149	130	57	194	92	286	12	3.6	2.9	27
25	267	146	205	107	65	201	82	310	11	3.2	3.2	17
26	167	99	192	84	80	605	77	87	11	2.9	2.0	12
27	118	85	250	80	106	1,470	77	67	11	2.9	2.6	8.9
28	96	72	140	67	485	672	80	104	12	5.6	2.3	8.9
29	79	67	108	70	.....	322	109	290	7.9	19	5.6	8.9
30	68	63	287	72	.....	252	82	149	7.9	12	7.4	8.4
31	45	.....	389	65	.....	274	.....	102	.....	11	7.9	.....
1913-14.												
1	8.4	49	146	51	530	80	426	256	23	6.4	2.9	5.6
2	30	41	149	38	314	1,040	905	204	21	12	4.4	4.8
3	36	41	158	99	221	667	451	182	21	16	4.4	3.2
4	23	36	167	87	211	294	314	164	26	11	4.4	3.2
5	14	35	149	80	201	201	256	314	40	8.4	4.4	3.2
6	15	32	135	57	114	135	221	476	30	6.4	4.0	2.0
7	13	29	238	80	119	131	256	294	21	11	3.6	2.6
8	12	39	339	53	90	127	599	228	22	23	3.2	1.0
9	10	984	211	57	55	117	1,220	204	21	11	2.9	1.4
10	7.9	723	194	57	49	97	503	173	20	7.4	3.2	1.4
11	10	330	185	27	39	122	426	155	14	6.4	3.6	1.2
12	21	235	176	45	20	107	530	204	12	6.4	4.4	1.2
13	38	198	161	38	19	92	426	678	11	6.4	4.8	.8
14	24	179	152	47	36	80	314	335	11	6.4	4.0	.6
15	18	176	140	61	55	67	314	238	11	6.4	3.6	.5
16	16	164	132	63	59	94	294	204	14	6.4	2.9	
17	14	161	124	63	61	140	357	173	12	6.4	2.6	.5
18	12	155	109	59	63	208	530	155	12	5.6	2.9	.6
19	10	152	102	49	75	149	647	141	11	4.8	2.9	.5
20	35	214	149	36	80	112	775	127	11	4.0	4.4	.4
21	75	201	170	45	75	121	617	112	11	3.2	38	.5
22	39	173	117	36	75	130	357	104	8.9	6.9	47	.5
23	29	152	75	30	59	130	275	87	4.8	6.9	20	.5
24	20	130	97	38	55	112	221	78	4.8	2.9	11	.5
25	135	124	99	221	51	87	195	57	4.4	3.2	7.4	.6
26	762	127	92	335	45	117	426	42	2.6	2.9	5.6	1.2
27	461	117	85	426	38	736	503	38	2.9	2.7	2.9	1.4
28	167	104	75	402	59	695	370	40	4.4	2.6	3.6	1.4
29	109	127	67	335	.....	653	310	30	6.9	2.6	4.0	1.4
30	82	149	61	402	.....	339	335	28	8.9	2.6	8.9	2.0
31	63	.....	55	530	.....	298	.....	26	.....	2.9	8.4	.....

Daily discharge, in second-feet, of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	2.3	2.0	14	12	45	138	35	102	7.4	23	18	43
2	2.3	4.0	16	12	61	124	30	87	5.6	51	13	30
3	2.0	2.6	18	12	53	99	35	82	5.2	65	26	27
4	2.0	2.3	15	12	67	84	38	75	4.8	38	1,180	24
5	2.0	2.6	11	12	77	97	38	65	4.0	30	646	23
6	2.0	2.9	8.9	17	143	82	61	61	2.6	38	256	15
7	2.0	3.6	9.4	65	260	72	127	53	3.6	19	208	12
8	2.0	2.0	11	114	173	84	130	61	3.6	919	149	13
9	2.0	4.4	10	38	117	75	158	70	3.2	886	87	13
10	2.3	3.6	8.4	23	77	61	179	51	2.6	176	84	13
11	2.6	2.0	5.6	12	57	59	570	38	2.3	80	57	12
12	2.6	3.6	7.4	41	63	53	710	33	2.0	135	39	9.4
13	2.6	2.6	7.9	338	67	50	256	32	1.2	117	61	11
14	2.6	2.9	51	238	57	45	173	30	1.2	61	47	6.4
15	2.6	2.6	55	221	221	47	135	24	1.4	41	38	3.6
16	3.6	41	29	238	576	41	117	23	2.9	35	35	3.6
17	12	35	23	335	294	38	107	24	4.8	32	32	4.4
18	17	19	15	879	204	33	102	27	6.0	30	24	4.4
19	17	14	12	840	161	30	92	23	4.0	26	23	4.0
20	17	11	12	416	143	33	82	19	5.6	112	19	6.0
21	11	7.9	23	256	135	36	75	14	6.4	35	19	33
22	7.4	7.4	33	218	130	32	59	53	3.2	67	127	38
23	6.9	6.9	35	221	143	35	47	49	2.9	38	173	12
24	6.9	7.4	20	286	388	45	43	36	2.6	30	80	7.4
25	5.2	10	12	218	1,810	65	39	26	2.3	33	72	5.2
26	1.4	17	12	182	530	102	38	24	2.0	24	53	6.0
27	.4	26	11	158	238	61	36	35	2.0	23	38	7.4
28	.6	51	12	135	158	47	35	23	9.4	23	35	7.9
29	1.4	41	23	107	.....	38	35	12	6.9	26	35	6.0
30	2.0	29	23	80	.....	30	75	9.4	6.0	26	80	6.4
31	2.6	.....	14	57	.....	38	.....	8.9	.....	18	77	.....

NOTE.—Discharge determined from two fairly well defined rating curves—one applicable to the chain gage readings and the other to the hook gage.

Discharge relation affected by ice Dec. 4, 1910, to Mar. 26, 1911; Jan. 4 to Mar. 13, 1912; Feb. 3 to Mar. 12, 1913; Dec. 27, 1913, to Mar. 1, 1914; Nov. 19–27, 1914; Dec. 16, 1914, to Jan. 17, 1915; Jan. 30 to Feb. 15, 1915, and Feb. 27 to Mar. 12, 1915. Daily discharge Feb. 3 to Mar. 12, 1913; Dec. 27, 1913, to Mar. 1, 1914; Nov. 19–27, 1914; Dec. 16, 1914, to Jan. 17, 1915; Jan. 30 to Feb. 15, 1915; and Feb. 27 to Mar. 12, 1915, estimated from discharge measurements, climatic records, and information furnished by the observer. No record obtained Sept. 4–20, Sept. 22–24, and Nov. 7–14, 1912; discharge estimated by comparison with records at Knightville.

Monthly discharge of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915.

[Drainage area, 53 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1910.						
July 14–31	12	5.2	7.82	0.148	0.10	B.
August	29	4.4	11.3	.213	.25	B.
September	196	.0	26.9	.508	.57	B.
1910–11.						
October	14	.0	6.71	.127	.15	B.
November	322	6.9	54.9	1.04	1.16	A.
December	.....	.....	[a] 30.0	.567	.65	D.
January	.....	.....	[a] 70.0	1.32	1.52	D.
February	.....	.....	[a] 25.0	.472	.49	D.
March	1,270	.....	[a] 176	3.33	3.84	D.
April	1,030	96	264	4.98	5.56	B.
May	212	30	78.4	1.48	1.71	A.
June	435	21	84.4	1.59	1.77	A.
July	30	3.5	13.3	.251	.29	B.
August	94	.8	20.9	.394	.45	B.
September	91	13	36.7	.692	.77	B.
The year	1,270	.0	71.7	1.35	18.36	

[a] Estimates based on comparisons with records at other stations in Westfield River basin.

Monthly discharge of Middle Branch of Westfield River at Goss Heights, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1911–12.						
October	1,760	24	285	5.38	6.20	D.
November	300	48	144	2.72	3.04	D.
December	560	78	151	2.85	3.29	D.
January	.....	.....	[a] 86.7	1.64	1.89	D.
February	.....	.....	[a] 86.2	1.63	1.76	D.
March	1,690	.....	[a] 413	7.79	8.98	C.
April	750	113	351	6.62	7.39	B.
May	345	53	175	3.30	3.80	B.
June	300	7.8	45.1	.851	.95	B.
July	16	.0	5.28	.100	.12	B.
August	46	.4	10.6	.200	.23	B.
September	196	6.9	23.5	.443	.49	B.
The year	1,690	.0	148	2.79	38.14	
1912–13.						
October	500	7.0	51.6	.974	1.12	D.
November	600	43	129	2.43	2.71	C.
December	418	59	154	2.91	3.36	B.
January	519	65	183	3.45	3.98	B.
February	485	38	72.0	1.36	1.42	C.
March	1,470	60	264	4.98	5.74	C.
April	892	77	205	3.87	4.32	A.
May	310	20	71.1	1.34	1.54	A.
June	77	7.9	25.5	.481	.54	B.
July	19	2.9	6.13	.116	.13	C.
August	7.9	1.6	3.77	.071	.08	C.
September	75	2.9	11.8	.223	.25	B.
The year	1,470	1.6	98.3	1.86	25.19	
1913–14.						
October	762	7.9	74.5	1.41	1.63	B.
November	984	29	179	3.38	3.77	A.
December	339	55	139	2.62	3.02	A.
January	530	27	127	2.40	2.77	B.
February	530	19	102	1.92	2.00	B.
March	1,040	67	241	4.55	5.25	B.
April	1,220	195	446	8.42	9.39	A.
May	678	26	179	3.38	3.90	A.
June	40	2.6	14.1	.266	.30	B.
July	23	2.6	6.81	.129	.15	B.
August	47	2.6	7.43	.140	.16	B.
September	5.6	.4	1.51	.028	.03	C.
The year	1,220	.4	126	2.38	32.37	
1914–15.						
October	17	.4	4.72	.089	.10	B.
November	51	2.0	12.2	.230	.26	C.
December	55	5.6	18.0	.340	.39	C.
January	879	12	188	3.55	4.09	C.
February	1,810	45	230	4.34	4.52	C.
March	138	30	60.5	1.14	1.31	C.
April	710	30	122	2.30	2.57	A.
May	102	8.9	41.0	.774	.89	A.
June	9.4	1.2	3.92	.074	.08	B.
July	919	18	105	1.98	2.28	A.
August	1,180	13	124	2.34	2.70	A.
September	43	3.6	13.6	.257	.29	A.
The year	1,810	.4	76.1	1.44	19.48	

[a] Estimates based on comparisons with records at other stations in Westfield River basin.

Days of deficiency in discharge of Middle Branch of Westfield River at Goss Heights, Mass., during the years ending Sept. 30, 1911–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.				
		1910–11	1911–12	1912–13	1913–14	1914–15
1.0	0.11	4	8	.....	13	2
2.0	.23	6	8	1	22	7
3.0	.34	9	11	17	41	44
4.0	.46	12	24	32	52	54
5.0	.57	16	27	46	69	63
10	1.1	43	59	96	93	98
15	1.7	88	83	115	117	129
20	2.3	109	89	126	122	147
30	3.4	163	104	141	142	176
40	4.6	206	112	162	164	226
50	5.7	238	123	177	177	244
75	8.5	277	158	214	201	279
100	11.4	304	195	242	226	300
150	17.1	328	255	295	266	324
200	22.7	338	294	315	291	334
250	28.4	347	314	326	309	344
300	34.1	350	319	341	318	350
350	39.8	355	331	345	330	351
400	45.5	355	333	351	334	352
450	51.2	357	336	355	341	354
500	56.8	357	339	357	344	354
600	68.2	360	353	360	351	357
700	79.6	361	358	363	357	358
800	90.9	361	359	363	361	359
900	102	362	359	364	361	362
1,000	114	362	362	364	363	363
1,500	170	365	364	365	365	364
2,000	227	.....	366	.....	.....	365

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

WEST BRANCH OF WESTFIELD RIVER AT CHESTER, MASS.

LOCATION.—At steel highway bridge about 500 feet above the Boston & Albany Railroad bridge in the town of Chester and about 400 feet below mouth of Walker Brook.

DRAINAGE AREA.—73 square miles.

RECORDS AVAILABLE.—Station established September 30, 1915; several discharge measurements in period 1910 to 1915.

GAGE.—Chain gage attached to upstream side of bridge; read twice daily.

DISCHARGE MEASUREMENTS.—Made by wading just below mouth of Walker Brook or from upstream side of bridge.

CHANNEL AND CONTROL.—Channel covered with coarse gravel and bowlders. Riffle about 300 feet below the station forms the control.

WINTER FLOW.—Discharge relation affected by ice.

REGULATION.—Several small power plants on the main stream and Walker Brook above the station affect distribution of flow at low stages.

Discharge measurements of West Branch of Westfield River during 1910–1915.

Date.	Made by—	Gage height.	Discharge.
		Feet.	*Sec.-ft.*
1910. Oct. 15	W. G. Hoyt		33.2
1911. Apr. 15	do	[a] 4.18	651
1915. Sept. 29	Hardin Thweatt	2.44	35.3

[a] Water surface referenced to iron beam in bridge and later reduced to datum of present gage.

WESTFIELD LITTLE RIVER NEAR WESTFIELD, MASS.[1]

LOCATION.—At the diversion dam of the Springfield waterworks, in the town of Russell, 3 miles below the confluence of Pebble and Borden brooks and about 3 miles west of Westfield. Originally (July, 1905, to December, 1909) a short distance below Borden Brook near Cobble Mountain.

DRAINAGE AREA.—43 square miles at original site; 48 square miles at present site.

RECORDS AVAILABLE.—July 13, 1905, to December 31, 1909, at original site; March 1, 1910, to September 30, 1915, at present site.

DETERMINATION OF DISCHARGE.—At the original site below Borden Brook (used 1905–1909) the discharge was determined by methods commonly employed at current-meter gaging stations. From August, 1906, to September, 1907, a 30-foot weir was maintained a short distance below the gage.[2]

Since March 1, 1910, high-water flow determined from continuous record of head on concrete diversion dam (crest length, 155.4 feet), for which coefficients have been deduced from experiments at Cornell University; low water flow, less than 163 second-feet, determined from continuous record of head on a 12-foot sharp-crested weir without end contractions, the crest being 2.55 feet below that of the dam. Water diverted to city of Springfield is measured by a 54-inch Venturi meter, using continuous record chart. Daily record corrected for storage in a reservoir on Borden Brook about 5 miles above station, but owing to the time required for water to reach the dam and the natural storage along the stream the record as corrected does not represent exactly the natural flow of the stream at all times.

EXTREMES OF DISCHARGE.—Maximum discharge for 24 hours, 1909–1915: 1,490 second-feet, March 28, 1914. Minimum discharge apparently zero at various times when the water released from the reservoir was equal to or greater than the total flow at the diversion dam.

DIVERSIONS.—Record of water diverted at station for municipal supply of Springfield included in records as published.

COOPERATION.—Data collected and compiled under the direction of E. E. Lochridge, chief engineer, board of water commissioners, Springfield, Mass.

[1] Formerly described as near Blandford, Mass.

[2] Results obtained by weir and current-meter methods are compared in U. S. Geol. Survey Water-Supply Papers 201, pp. 105–110, and 241, pp. 164–168.

Discharge measurements of Westfield Little River near Westfield, Mass., during 1905–1909.

Date.	Made by—	Gage height.	Discharge.
1905.		*Feet.*	*Sec.-ft.*
uly 14	Barrows and Norcross..	2.32	32.4
Aug. 10	Norcross and Lochridge	2.30	23.8
Sept. 8	.....do.....	2.98	82
27	T. W. Norcross.....	2.40	26.5
28	.....do.....	2.39	25.7
Oct. 13	.....do.....	2.94	85
14	.....do.....	2.76	59
Nov. 9	Norcross and Lochridge	2.57	40.1
1906.			
Mar. 23	T. W. Norcross.....	[a] 2.61	38
Apr. 5	.....do.....	4.21	449
6	.....do.....	4.64	594
6	.....do.....	4.53	587
6	.....do.....	4.50	565
6	.....do.....	4.44	555
23	.....do.....	3.31	162
24	.....do.....	3.21	135
June 22	F. E. Pressey.....	2.48	26.5
Aug. 9	.....do.....	2.58	45.2
10	.....do.....	2.34	23.4
10	.....do.....	2.32	26.0
10	.....do.....	2.34	22.8
10	G. M. Brett.....	2.34	21.4
10	F. E. Pressey.....	2.34	22.4
10	G. M. Brett.....	2.33	24.2
10	Barrows and Pressey...	2.33	22.3
Sept. 18	F. E. Pressey.....	1.68	3.4
18	.....do.....	1.68	3.2
19	.....do.....	1.68	3.3
19	.....do.....	1.68	3.1
19	.....do.....	1.68	3.1
19	.....do.....	1.68	3.1
19	.....do.....	1.68	2.8
19	.....do.....	1.68	3.2
19	.....do.....	1.68	2.9
19	.....do.....	1.68	3.3
24	.....do.....	2.09	11.8
25	.....do.....	2.04	10.6
25	.....do.....	2.02	11.2
25	.....do.....	2.02	10.6
Oct. 21	.....do.....	3.28	154
22	.....do.....	3.00	96
22	.....do.....	3.00	94
22	.....do.....	2.99	89
22	.....do.....	2.99	87
22	.....do.....	2.98	88
22	.....do.....	2.93	81
22	.....do.....	2.92	77
23	.....do.....	2.76	63
23	.....do.....	2.75	61
23	.....do.....	2.72	56
23	.....do.....	2.71	56
23	.....do.....	2.72	59
24	.....do.....	2.60	43.6
1906.			
Oct. 24	F. E. Pressey.....	2.59	41.3
24	.....do.....	2.58	40.4
24	.....do.....	2.56	39.8
24	.....do.....	2.56	39.3
24	.....do.....	2.58	40.8
25	.....do.....	3.28	150
25	.....do.....	3.28	138
25	.....do.....	3.26	140
Nov. 23	Lee and James.....	3.02	93
24	.....do.....	2.84	72
1907.			
Apr. 24	Wood and Mention.....	4.20	472
27	.....do.....	3.12	113
27	.....do.....	3.10	114
27	.....do.....	3.09	118
May 17	D. M. Wood.....	3.76	309
17	Barrows and Norcross..	3.71	278
July 19	.....do.....	2.03	11.5
Aug. 22	T. W. Norcross.....	1.78	4.80
22	.....do.....	1.78	4.89
22	.....do.....	1.78	5.09
22	.....do.....	1.78	4.85
22	.....do.....	1.72	4.09
22	.....do.....	1.70	4.03
23	.....do.....	1.73	4.70
23	.....do.....	1.73	4.81
23	.....do.....	1.73	4.57
23	.....do.....	1.74	4.37
23	.....do.....	1.73	4.36
23	.....do.....	1.73	4.41
23	.....do.....	1.72	4.48
23	.....do.....	1.71	4.46
23	.....do.....	1.71	4.21
23	.....do.....	1.71	3.58
1908.			
Apr. 24	D. M. Wood.....	2.85	69.4
24	.....do.....	2.85	76.7
Sept. 25	Wood and French.....	1.68	3.9
Oct. 19	.....do.....	1.88	9.0
19	.....do.....	1.87	4.4
Dec. 21	.....do.....	[a] 2.20	18.1
1909.			
Jan. 1	D. M. Wood.....	[a] 2.40	21.8
7	.....do.....	[a] 3.54	221
21	.....do.....	[a] 2.61	22.7
Feb. 10	.....do.....	[a] 3.53	86.9
24	.....do.....	4.61	618
Mar. 9	.....do.....	2.71	53.6
Apr. 2	.....do.....	3.52	226
June 2	.....do.....	2.60	45.1
Aug. 25	.....do.....	1.96	9.3
Oct. 9	T. W. Norcross.....	1.92	5.3

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915.

Day.	Aug.	Sept.	Day.	Aug.	Sept.	Day.	Aug.	Sept.
1905.			1905.			1905.		
1	220	31.5	11	25.1	42.8	21	15.6	89.4
2	100	33.8	12	23.9	276	22	14.4	69.8
3	69.8	423	13	17.8	272	23	12.2	51.0
4	51.0	832	14	13.6	155	24	11.6	40.9
5	30.7	518	15	29.2	85.0	25	64.7	35.5
6	21.7	255	16	85.0	67.3	26	40.9	29.2
7	30.7	141	17	64.7	64.7	27	27.8	29.2
8	27.1	92.4	18	36.4	92.4	28	24.5	27.8
9	26.4	69.8	19	22.8	93.9	29	33.0	23.9
10	20.6	51.0	20	18.7	77.9	30	51.0	23.9
						31	39.9	.....

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915—Continued.

Day.	Oct.	Nov.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.								
1	21.7	25.1	339	76.5	85.0	92.4	27.8	5.8
2	21.7	25.1	203	69.8	61.1	48.9	21.7	4.8
3	40.9	23.3	147	90.9	49.9	35.5	16.0	8.0
4	30.7	58.7	147	79.3	40.0	93.9	25.8	8.7
5	25.8	40.9	339	71.1	41.9	46.8	19.6	7.3
6	22.8	51.0	563	68.5	88.0	29.9	16.0	5.8
7	20.6	62.3	272	79.3	73.8	23.9	14.4	4.8
8	19.6	51.0	180	69.8	58.7	19.6	69.8	4.4
9	19.6	41.9	196	97.0	46.8	16.9	42.8	4.1
10	18.2	38.1	538	121	57.6	17.8	23.9	3.9
11	17.8	32.2	745	92.4	58.7	17.8	22.8	3.6
12	203	30.7	545	76.5	36.4	15.6	17.8	4.6
13	89.4	29.2	364	61.1	27.1	12.6	15.2	5.2
14	59.9	29.2	300	48.9	20.6	10.9	11.6	4.4
15	42.8	35.5	1,060	29.2	16.4	9.8	10.6	3.7
16	34.7	33.0	706	19.6	33.0	8.7	9.8	3.1
17	33.8	31.5	322	17.3	83.6	16.9	8.0	3.1
18	32.2	29.9	244	14.8	105	25.1	8.2	2.8
19	30.7	26.4	183	13.3	93.9	16.9	6.9	2.8
20	129	33.8	164	14.0	66.0	14.0	6.0	4.6
21	85.0	42.8	134	13.3	49.9	14.0	30.7	22.8
22	56.5	42.8	115	12.2	38.1	12.2	16.0	27.8
23	41.9	42.8	141	11.2	28.5	13.6	10.9	38.1
24	42.8	33.8	141	12.2	38.1	15.2	14.0	13.6
25	42.8	33.8	117	18.7	29.2	12.9	9.8	10.3
26	36.4	32.2	102	16.4	23.9	9.2	8.7	8.7
27	30.7	32.2	88.0	38.1	19.2	9.2	8.0	10.3
28	28.5	161	76.5	210	16.0	20.6	18.7	9.0
29	26.4	227	67.2	426	13.3	32.2	11.9	9.8
30	26.4	180	88.0	213	12.9	85.0	9.0	25.1
31	24.5	.....	.....	123	.....	39.0	7.8	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	18.7	23.3	46.0	384	82.8	37.1	173	66.0	66.0	34.7	5.8	3.0
2	15.2	21.1	29.0	283	89.6	37.1	125	62.3	266	25.1	6.4	2.8
3	11.9	20.1	27.0	142	86.8	61.6	107	56.5	412	21.1	5.7	7.6
4	10.3	16.4	31.0	448	78.7	50.7	97.0	90.9	248	14.4	8.7	38.1
5	8.2	15.6	32.0	311	74.6	40.4	105	83.6	244	12.9	6.8	32.2
6	7.3	15.2	57.8	248	73.2	37.1	97.0	69.8	300	12.6	9.8	23.9
7	9.0	14.4	65.4	61.6	68.0	35.0	89.4	85.0	203	11.6	8.2	14.8
8	8.0	12.9	84.0	156	62.9	33.0	75.2	76.5	117	11.2	5.3	10.6
9	9.8	12.9	95.4	168	54.3	31.0	75.2	77.9	83.6	10.6	6.6	9.5
10	67.3	11.6	81.5	118	49.5	30.0	69.8	79.3	68.5	10.0	5.3	10.0
11	40.9	19.6	89.6	92.5	44.8	28.0	79.3	85.0	66.0	19.2	5.3	33.0
12	30.7	33.8	107	78.7	39.3	28.0	79.3	72.5	56.5	35.5	4.0	42.8
13	19.6	35.5	98.3	65.4	38.2	35.0	98.5	57.6	52.0	32.2	4.9	16.4
14	12.9	31.5	76.0	54.3	44.8	48.3	117	48.9	48.9	16.0	6.0	12.9
15	10.9	25.8	70.5	50.7	48.3	136	193	43.8	47.8	11.9	5.0	10.3
16	10.3	24.5	116	42.6	46.0	110	149	149	41.9	11.2	4.1	9.5
17	9.2	22.8	116	46.0	43.7	136	170	336	36.4	10.6	9.2	10.0
18	11.6	53.1	78.7	54.3	41.5	173	129	170	35.5	12.2	7.6	9.0
19	11.2	367	53.1	150	39.3	180	119	115	89.4	9.8	4.7	10.3
20	297	234	57.8	364	41.5	218	100	97.0	43.8	9.8	5.3	9.0
21	167	139	104	133	43.7	177	89.4	68.5	35.5	19.2	5.7	8.2
22	86.5	139	101	128	41.5	224	85.0	57.6	29.2	13.3	3.8	8.7
23	56.5	93.9	98.3	88.2	37.1	545	98.5	52.0	25.8	10.0	4.0	230
24	42.8	72.5	116	88.2	37.1	493	360	44.8	23.3	8.2	7.6	458
25	82.2	49.9	106	92.5	37.1	251	200	43.8	21.1	8.0	5.3	158
26	80.7	46.8	96.8	95.4	37.1	255	119	41.9	19.6	10.0	3.8	79.3
27	54.2	46.8	86.8	95.4	37.1	248	95.4	170	15.6	8.5	3.0	56.5
28	44.8	46.8	82.8	92.5	37.1	437	85.0	170	14.8	5.7	4.9	41.9
29	37.3	39.0	82.8	86.8	.....	482	73.8	85.0	14.0	5.3	4.7	752
30	29.2	42.8	89.6	81.5	.....	390	71.1	71.1	62.3	6.2	4.6	318
31	27.8	.....	162	81.5	.....	276	.....	53.1	.....	5.3	3.1	.....

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	152	217	54.4	269	.....	100	258	612	189	5.7	7.6	7.0
2	90.9	213	56.5	139	.....	107	213	234	76.5	19.2	6.6	6.6
3	71.1	885	62.3	111	.....	83.6	158	224	47.8	127	5.8	6.2
4	141	552	66.0	85	.....	58.7	131	158	38.1	63.5	7.2	6.0
5	85.0	266	68.5	.....	.....	48.9	127	89.4	29.9	37.3	9.5	5.8
6	62.3	717	66.0	.....	.....	41.9	147	79.3	29.9	25.1	35.5	5.3
7	61.1	1,040	75.2	.....	.....	43.8	152	108	28.5	20.1	58.7	5.5
8	696	493	93.9	.....	61.1	39.9	245	668	26.4	17.8	36.4	5.0
9	328	308	552	.....	42.8	43.8	430	314	22.2	15.2	21.1	4.9
10	164	224	570	.....	37.3	39.9	258	227	18.2	11.6	19.2	4.4
11	111	217	266	.....	34.7	43.8	183	164	15.6	9.0	19.2	4.3
12	119	149	170	507	34.7	47.8	147	123	14.8	9.5	15.6	4.4
13	85.0	119	158	780	39.9	245	119	93.9	13.3	9.5	13.6	4.1
14	71.1	100	147	570	58.7	269	107	93.9	11.6	9.5	11.6	4.1
15	61.1	89.4	139	402	808	338	98.5	107	12.9	10.6	10.3	3.8
16	51.0	75.2	136	213	605	384	93.9	79.3	22.2	9.5	10.3	3.8
17	43.8	71.1	134	117	234	402	104	69.8	16.4	8.7	14.8	3.6
18	36.4	63.5	127	90.9	147	364	93.9	56.5	13.3	9.5	14.8	3.3
19	33.0	89.4	125	93.9	139	374	105	51.0	12.2	10.0	11.6	3.3
20	75.2	75.2	119	107	153	269	98.5	46.8	11.9	9.5	9.0	3.0
21	58.7	62.3	115	111	139	189	97.0	152	9.0	9.0	7.6	3.4
22	47.8	89.4	113	107	123	158	90.9	448	9.5	10.6	11.2	3.3
23	39.9	75.2	119	117	117	167	73.8	286	34.7	11.6	8.5	3.4
24	36.4	68.5	647	.....	111	563	73.8	170	45.8	8.5	7.6	3.3
25	32.2	79.3	300	.....	105	647	68.5	105	22.2	24.5	16.0	2.9
26	29.2	71.1	176	.....	104	668	66.0	55.3	14.0	25.1	9.2	3.1
27	948	58.7	149	.....	98.5	808	66.0	46.8	11.2	13.6	8.7	3.3
28	1,590	55.3	149	.....	95.4	885	69.8	39.9	9.0	12.2	8.2	3.3
29	1,150	71.1	152	.....	95.4	850	66.0	32.2	7.6	11.6	7.8	37.3
30	692	55.3	370	.....	.....	458	69.8	29.9	7.0	10.3	7.0	13.6
31	336	.....	437	.....	.....	308	.....	605	.....	9.0	6.8	.....
1908–9.												
1	10.3	14.8	9.0	19.3	19.7	149	254	440	51.0	7.6	2.6	4.4
2	9.2	13.3	9.0	17.1	24.3	137	242	340	40.9	7.2	2.4	4.1
3	8.2	11.9	8.5	14.8	18.4	125	230	238	29.9	6.4	2.3	4.3
4	7.6	10.9	8.2	13.3	14.2	113	180	136	25.8	5.7	2.2	4.1
5	6.2	10.6	8.0	340	27.2	101	196	115	36.4	5.7	17.3	4.1
6	5.8	10.3	7.6	721	198	90	300	111	31.5	5.7	18.2	4.7
7	5.7	10.0	69.8	218	113	78	406	100	29.9	6.0	15.2	3.8
8	5.5	10.0	69.8	80.8	77.3	66	318	90.9	27.1	5.7	11.9	3.6
9	5.3	9.5	83.6	61.5	55.0	54.4	248	68.5	23.3	7.6	8.5	3.4
10	5.0	9.0	82.2	66.2	77.1	220	149	63.5	52.0	6.0	5.7	4.4
11	10.9	8.7	76.5	52.5	204	149	105	58.7	43.8	6.4	5.0	10.6
12	8.5	8.5	58.7	33.7	145	109	97.0	52.0	31.5	6.8	3.8	6.0
13	6.4	8.2	52.0	28.4	119	85.0	89.4	51.0	28.5	6.0	3.3	4.9
14	5.8	8.2	49.9	25.1	165	77.9	955	45.8	25.8	6.0	5.7	4.4
15	5.7	10.6	98.5	74.0	147	67.3	1,380	38.1	22.2	6.4	4.7	4.4
16	5.0	13.3	73.8	48.5	123	92.4	406	36.4	21.1	7.2	8.5	4.1
17	4.9	12.6	58.7	30.5	162	55.3	283	34.7	23.3	14.0	22.2	6.8
18	6.0	13.3	49.9	48.0	150	64.7	180	66.0	88.0	16.4	88.0	8.5
19	6.0	13.3	40.0	63.0	92.6	44.8	105	56.5	58.7	10.6	43.8	5.3
20	6.0	14.0	30.0	40.5	1,020	55.3	93.9	49.9	36.4	8.5	38.1	4.1
21	5.8	14.0	20.1	18.5	500	67.3	100	43.8	25.1	7.6	27.1	3.8
22	5.7	13.3	18.7	17.2	536	55.3	180	75.2	22.2	7.6	15.2	3.3
23	5.2	13.3	16.4	55.6	574	64.7	266	66.0	20.1	13.3	10.6	3.4
24	5.2	12.9	14.0	60.5	609	58.7	170	52.0	17.8	16.4	8.5	5.0
25	6.6	14.0	13.3	73.0	552	1,380	131	43.8	15.6	10.6	7.2	17.3
26	31.5	16.4	12.6	62.0	342	668	97.0	40.9	12.6	9.2	6.6	38.1
27	39.9	15.6	12.2	50.4	227	378	75.2	164	10.6	8.0	6.0	33.0
28	23.3	13.3	11.2	43.4	161	360	189	136	9.5	7.2	5.7	28.5
29	19.6	10.6	10.0	35.8	.....	290	115	196	8.5	5.7	5.7	25.1
30	17.3	9.5	9.2	30.9	.....	278	189	131	8.0	4.4	5.3	23.3
31	16.0	.....	22.2	23.9	.....	266	.....	75.2	.....	3.6	4.9	.....

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	21.1	7.6	21.1	.....	.....	.....	.....	.....	98	8.1	14	.....
2	18.2	7.2	22.2	.....	.....	.....	.....	.....	70	.....	18	.....
3	14.8	7.0	19.2	.....	.....	.....	.....	.....	59	37	13	12
4	13.3	11.9	19.6	.....	.....	.....	.....	.....	51	16	9.4	5.1
5	11.2	9.0	23.3	.....	.....	.....	.....	.....	32	20	18	25
6	10.0	8.0	20.1	.....	.....	.....	.....	.....	161	8.3	22	27
7	8.0	7.8	18.2	.....	.....	.....	.....	.....	161	22	.....	20
8	7.6	7.4	16.4	.....	.....	.....	.....	.....	94	.....	.7	23
9	7.4	7.6	16.4	.....	.....	.....	.....	.....	65	.....	8.1	16
10	7.2	7.6	14.0	.....	.....	.....	.....	.....	122	.....	24	13
11	14.8	7.2	13.3	.....	.....	.....	.....	.....	321	.....	61	28
12	12.6	7.6	13.3	.....	.....	.....	.....	.....	389	.....	23	14
13	10.0	8.0	16.0	.....	.....	.....	.....	.....	246	.....	18	25
14	8.5	7.2	266	.....	.....	.....	.....	72	127	42	16	.....
15	8.0	7.2	224	.....	.....	.....	.....	59	99	15	25	.....
16	7.4	7.0	152	.....	.....	.....	.....	28	85	16	9.5	.....
17	7.0	18.2	111	.....	.....	.....	.....	48	112	34	13	.....
18	6.8	13.3	75.2	.....	.....	.....	.....	53	111	18	6.6	.....
19	6.8	11.9	58.7	.....	.....	.....	.....	78	93	17	9.6	.....
20	7.2	11.2	52.0	.....	.....	.....	.....	56	63	20	11	.....
21	7.2	10.0	47.8	.....	.....	.....	.....	64	51	21	.8	.....
22	6.8	9.8	40.9	.....	.....	.....	.....	61	35	20	2.6	.....
23	6.4	10.6	38.1	.....	.....	.....	.....	57	29	15	6.6	2.0
24	13.3	11.6	22.2	.....	.....	.....	.....	52	27	4.7	4.7	6.7
25	12.6	14.0	20.1	.....	.....	.....	.....	46	27	4.6	3.4	.....
26	11.6	21.1	20	.....	.....	.....	.....	46	24	4.6	.....	.....
27	10.6	20.1	20	.....	.....	.....	.....	45	24	.9	.....	1.7
28	10.3	21.1	20	.....	.....	.....	.....	38	26	.....	7.8	.....
29	9.5	23.3	18	.....	.....	.....	.....	32	.....	5.8	15	24
30	8.7	22.2	16	.....	.....	.....	.....	32	15	11	3.1	2.9
31	7.8	.....	16	.....	.....	.....	.....	138	.....	20	16	.....
1910–11.												
1	.....	8.5	21	78	22	18	131	109	39	12	16	135
2	.....	26	21	67	30	26	112	137	39	13	1.5	78
3	.....	43	17	183	18	20	95	121	25	3.9	5.2	44
4	.....	140	10	188	33	22	89	96	25	5.8	18	40
5	.....	167	16	85	24	28	177	82	38	7.2	15	20
6	7.1	82	16	83	28	21	663	74	116	2	14	28
7	.....	47	15	36	19	21	505	65	357	27	.....	23
8	.....	39	16	38	25	29	268	66	214	17	.....	82
9	.....	42	14	49	19	20	184	63	123	18	.9	237
10	.....	20	13	54	17	20	170	56	75	.14	11	162
11	.....	54	12	31	17	28	186	43	29	.....	9.3	160
12	.....	30	12	44	3.2	23	164	41	89	.....	10	128
13	.....	36	4.7	34	6.6	31	158	58	365	6.9	9.8	83
14	.....	31	7.6	33	30	40	221	38	245	31	8.8	52
15	.....	23	4.0	34	20	55	289	44	128	4.3	18	46
16	.....	21	2.4	30	16	32	210	34	84	8.0	71	50
17	.....	21	1.0	25	24	31	148	33	67	11	25	43
18	.....	18	6.1	31	23	32	124	21	44	22	14	42
19	8.1	31	.....	23	25	31	117	117	46	17	16	25
20	.....	36	.....	11	25	32	161	141	27	17	16	21
21	.....	40	4.4	15	19	47	220	84	22	2.1	16	30
22	.2	43	.....	18	18	140	195	36	19	9.0	13	27
23	6.5	43	.....	5.5	15	93	146	60	18	9.6	4.8	26
24	8.0	38	8.2	14	22	99	134	33	18	64	5.6	30
25	8.0	.....	33	17	17	99	121	43	30	68	8.2	20
26	8.1	23	34	11	28	148	103	76	20	20	8.1	56
27	.....	15	33	44	25	650	99	57	20	37	22	33
28	.....	20	38	90	23	405	133	37	20	19	21	33
29	.....	19	28	121	.....	260	111	20	.82	19	137	55
30	6.9	15	34	46	.....	223	115	29	38	14	110	83
31	.....	.....	54	40	.....	169	.....	17	.....	7.9	115	.....

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	104	103	101	96	105	162	392	164	286	12	6.2	19
2	270	118	83	66	94	167	538	119	142	9.6	8.5	47
3	158	79	79	58	97	134	626	96	114	10	10	52
4	150	76	78	51	104	123	305	84	85	3.9	7.3	33
5	139	93	68	97	92	120	251	81	67	.....	8.7	23
6	94	66	64	52	110	121	377	187	60	.....	7.0	30
7	144	195	66	61	96	119	605	193	62	.....	5.5	20
8	128	139	45	52	96	122	489	152	55	.....	6.1	16
9	89	113	55	70	101	156	278	159	43	3.3	8.1	18
10	67	85	47	73	91	154	211	155	35	3.0	6.1	9.0
11	59	73	63	50	93	136	215	130	30	3.4	20	9.8
12	43	80	75	46	78	140	182	110	27	2.9	8.0	7.6
13	48	93	54	45	96	628	180	113	26	10	4.7	21
14	33	92	69	50	69	397	140	104	25	7.5	3.9	6.3
15	42	167	67	72	47	693	133	105	22	2.0	.....	.....
16	30	136	174	73	56	1,310	250	277	20	2.9	6.6	17
17	38	116	226	70	49	923	240	353	20	3.0	7.2	12
18	665	188	165	46	44	855	275	217	19	4.8	20	20
19	1,280	310	123	81	46	913	288	127	19	9.7	26	8.8
20	553	209	76	258	99	763	207	102	17	8.3	37	17
21	710	169	74	119	226	401	158	93	19	16	22	7.8
22	806	129	140	99	325	194	139	98	21	25	1 6	16
23	636	124	352	79	266	134	165	80	14	16	17	7.0
24	325	163	209	57	216	121	143	81	4.2	16	17	18
25	341	185	171	31	208	118	141	115	14	13	12	10
26	175	114	115	41	205	98	112	87	8.7	5.4	8.4	19
27	155	91	175	40	355	101	98	68	6.9	5.6	12	8.0
28	128	92	138	98	280	130	95	49	9.2	.....	8.6	19
29	107	113	105	96	216	557	94	54	13	.....	8.3	16
30	101	128	102	122	.....	555	168	463	11	.....	15	9.4
31	80	.....	110	96	.....	388	.....	486	.....	.....	14	.....
1912–13.												
1	6.9	50	52	316	90	155	175	95	65	3.2	2.3	0.5
2	8.5	82	82	170	58	118	141	65	47	3.7	7.9	2.5
3	9.7	53	190	265	44	80	115	63	49	4.0	15	3.7
4	8.9	35	123	315	49	65	110	55	39	2.7	.....	4.7
5	3.1	33	84	181	39	51	130	51	32	2.0	.....	17
6	3.7	40	160	139	36	43	119	49	29	.7	1.1	13
7	7.0	193	155	157	39	40	108	47	32	.....	2.4	.....
8	.....	364	110	504	43	40	95	32	38	.....	2.1	.....
9	1.4	188	70	368	38	48	69	26	30	.....	5.4	.....
10	3.0	133	72	203	34	101	63	26	23	.....	.5	.....
11	3.0	76	56	164	31	112	225	24	21	.....	1.4	.....
12	.9	78	59	243	33	154	469	25	19	.....	3.0	.....
13	.8	72	40	192	27	111	306	24	18	1.4	1.2	.....
14	1.0	143	42	136	27	273	235	24	17	.....	1.4	.....
15	1.1	137	48	116	32	357	189	22	15	1.4	4.5	.....
16	8.2	100	102	102	32	314	166	25	17	1.5	2.3	.....
17	6.5	75	59	119	29	200	134	29	2.4	1.2	.3	.....
18	5.9	64	45	154	24	137	102	26	5.8	15	2.6	.1
19	6.8	62	122	136	23	121	94	29	6.3	.....	.8	14
20	1.6	55	110	112	23	187	78	23	22	.4	.6	14
21	1.1	42	80	142	51	224	66	29	19	1.8	.5	29
22	2.1	40	47	122	76	190	64	33	15	1.4	3.4	49
23	123	48	52	111	170	145	66	138	5.9	1.8	3.2	31
24	303	99	44	135	86	172	62	389	8.4	1.4	1.8	25
25	192	188	35	125	47	204	55	206	4.5	2.4	4.2	15
26	146	130	45	104	40	466	41	107	9.5	1.8	1.4	8.0
27	94	102	191	96	50	1,120	37	64	.1	2.3	1.6	2.4
28	72	66	183	76	120	524	156	217	20	12	1.0	1.9
29	44	59	120	47	.....	279	167	485	14	5.1	27	7.0
30	45	40	461	61	.....	226	120	241	.....	4.0	7.0	8.4
31	41	.....	521	67	.....	208	.....	112	.....	3.4	4.1	.....

Daily discharge, in second-feet, of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Se
1913-14.												
1	9.7	50	110	44	247	129	306	163	15	15	2.8	1.7
2	65	51	96	37	165	736	530	129	17	19	16	3.6
3	31	45	102	48	107	360	316	117	18	41	11	.....
4	19	42	79	44	123	274	265	102	19	19	10	15
5	15	31	73	40	120	182	212	299	26	15	.....	12
6	13	28	52	34	89	165	173	229	10	14	.....	11
7	7.3	35	224	34	80	147	194	215	14	16	.....	.....
8	5.2	66	252	35	69	122	441	155	23	53	.....	.....
9	5.6	649	155	35	50	85	747	136	20	33	3.9	.....
10	6.9	485	93	34	44	89	340	113	19	23	.....	.....
11	19	226	97	25	42	78	271	84	22	22	.....	.....
12	35	149	76	26	32	59	330	146	21	17	.03	1.2
13	38	115	75	23	54	65	323	373	6.0	5.0	.3	.....
14	19	90	72	26	48	63	214	224	.....	2.8	.4	.....
15	18	94	54	19	65	62	195	152	4.3	7.1	18	.9
16	27	87	55	19	49	73	242	113	25	.4	12	3.5
17	14	59	61	47	60	142	370	99	20	6.7	.....	2.0
18	14	81	57	60	60	177	411	79	19	10	.....	2.3
19	7.0	95	42	46	55	128	369	70	20	17	2.0	2.5
20	40	144	33	28	43	98	453	60	20	13	3.0	1.2
21	60	111	41	26	38	81	450	57	10	.....	17	2.2
22	26	105	49	27	34	66	292	43	4.2	1.5	15	2.3
23	28	87	45	26	33	69	214	42	2.4	7.6	14	2.2
24	36	62	66	46	29	63	147	35	.2	8.1	.....	2.8
25	201	62	81	150	27	66	134	34	.....	8.4	.....	2.0
26	872	45	64	84	27	217	385	31	.....	20	2.3	2.4
27	801	51	63	70	27	720	427	29	.....	12	.8	.....
28	314	50	35	75	27	1,490	257	25	5.0	.....	.6	.....
29	168	126	48	81	.....	598	206	22	18	.....	19	.....
30	106	124	41	219	.....	317	171	20	16	1.4	19	.....
31	80	.....	49	259	.....	274	.....	16	.....	2.7	.....	.....
1914-15.												
1	.....	.....	19	0.5	146	114	38	228	24	88	19	43
2	.....	.....	28	15	126	80	28	145	19	135	20	35
3	.....	.....	23	20	96	70	37	115	16	114	26	35
4	.....	.....	33.	3.2	74	55	31	126	15	96	697	25
5	.....	1.0	16	4.3	62	68	50	119	13	77	522	21
6	.....	1.6	14	14	283	55	70	103	13	52	218	19
7	3.9	.7	14	326	303	53	123	101	15	47	160	20
8	13	11	22	138	153	55	140	131	17	382	103	17
9	.....	1.0	14	101	120	55	136	123	15	962	77	14
10	.....	.....	14	49	89	52	162	101	15	514	54	14
11	.....	.....	23	37	73	52	608	85	15	116	49	13
12	.....	.....	14	185	81	50	767	70	4.5	104	43	15
13	.....	.....	11	533	76	49	339	63	3.6	111	78	11
14	.....	12	29	232	49	52	177	57	11	73	56	.....
15	.....	14	27	149	300	42	133	50	16	57	42	3.9
16	12	78	9.9	105	652	41	118	42	73	48	36	7
17	17	95	3.3	130	258	39	110	49	125	41	41	22
18	13	40	3.6	807	138	41	101	51	112	33	33	23
19	16	151	15	925	111	36	94	41	62	25	24	12
20	17	142	20	413	98	21	93	36	120	25	22	12
21	14	49	24	157	95	31	64	48	117	28	28	38
22	15	95	15	99	83	32	77	126	42	51	134	78
23	.....	142	15	193	108	58	77	102	38	53	236	23
24	.....	142	14	266	658	49	78	80	31	41	129	26
25	.8	70	24	152	1,850	70	70	61	25	26	96	12
26	1.5	79	6.9	110	546	66	70	59	21	20	59	19
27	2.4	49	1.6	93	247	52	62	57	22	20	49	19
28	1.2	29	2.2	88	148	38	59	50	19	25	38	15
29	2.5	22	40	48	.....	35	58	42	14	40	38	13
30	18	28	17	44	.....	39	222	35	16	33	58	10
31	13	.....	25	49	.....	41	.....	26	.....	23	56	.....

NOTE.—Discharge Aug. 1, 1905, to Nov. 30, 1906, and Mar. 26, 1907, to Dec. 31, 1909, determined from a fairly well defined rating curve. Discharge Dec. 1, 1906, to Mar. 25, 1907, determined from readings at the weir and a weir formula. Discharge Jan. 1 to May 13, 1910, as published in Water-Supply Paper No. 321, pp. 124–125, was estimated from the flow of Borden Brook and is not considered reliable. Discharge subsequent to May 13, 1910, determined by subtracting from the total flow at the diversion dam the amount of water apparently released from the Borden Brook reservoir or by adding the amount of water apparently stored in the reservoir, as indicated by the elevation of the water surface in the reservoir. As no allowance has been made for evaporation and seepage from the reservoir, the results show the natural flow at the diversion dam only approximately. For days when no discharge records are given, the apparent storage release was equal to or greater than the total flow at the diversion dam. Discharge record furnished by the board of water commissioners of Springfield.

Monthly discharge of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1905–1909.

[Original site, drainage area, 43 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1905.						
August	220	11.6	41.0	0.953	1.10	B.
September	832	25.9	136	3.16	3.53	B.
1905–6.						
October	203	17.8	43.8	1.02	1.18	B.
November	227	23.3	51.9	1.21	1.35	B.
April	1,060	67.2	288	6.70	7.48	B.
May	426	11.2	74.3	1.73	1.99	B.
June	105	12.9	47.1	1.10	1.23	B.
July	93.9	8.7	27.0	.628	.72	B.
August	69.8	6.0	17.4	.405	.47	B.
September	38.1	2.8	9.0	.209	.23	B.
1906–7.						
October	297	7.3	42.9	.998	1.15	B.
November	367	11.6	57.6	1.34	1.50	B.
December	162	27.0	81.9	1.90	2.19	C.
January	448	42.6	141	3.28	3.78	C.
February	89.6	37.1	52.0	1.21	1.26	C.
March	545	28.0	170	3.95	4.55	C.
April	360	69.8	117	2.72	3.04	B.
May	336	41.9	89.7	2.09	2.41	B.
June	412	14.0	92.9	2.16	2.41	B.
July	35.5	5.3	13.9	.323	.37	B.
August	9.8	3.0	5.65	.131	.15	B.
September	752	2.8	80.9	1.88	2.10	B.
The year	752	2.8	78.9	1.83	24.91	
1907–8.						
October	1,590	29.2	242	5.63	6.49	B.
November	1,040	55.3	222	5.16	5.76	B.
December	647	54.4	191	4.44	5.12	C.
January	780	.....	165	3.84	4.43	C.
February	808	34.7	141	3.28	3.54	C.
March	885	39.9	292	6.79	7.83	B.
April	430	66.0	134	3.12	3.48	B.
May	668	29.9	180	4.19	4.83	B.
June	189	7.0	27.4	.637	.71	B.
July	127	5.7	18.8	.437	.50	B.
August	58.7	5.8	14.1	.328	.38	B.
September	37.3	2.9	5.71	.133	.15	B.
The year	1,590	2.9	136	3.16	43.22	
1908–9.						
October	39.9	4.9	10.0	.233	.27	B.
November	16.4	8.2	11.8	.274	.31	B.
December	98.5	7.6	35.6	.828	.95	B.
January	721	13.3	79.6	1.85	2.13	C.
February	1,020	14.2	230	5.35	5.57	C.
March	1,380	44.8	187	4.35	5.02	B.
April	1,380	75.2	258	6.00	6.69	B.
May	440	34.7	104	2.42	2.79	B.
June	88.0	8.0	29.2	.679	.76	B.
July	16.4	3.6	7.92	.184	.21	B.
August	88.0	2.2	13.3	.309	.36	B.
September	38.1	3.3	9.36	.218	.24	B.
The year	1,380	2.2	80.1	1.86	25.30	
1909.						
October	21.1	6.4	10.1	.235	.27	B.
November	23.3	7.0	11.5	.268	.30	B.
December	266	13.3	46.8	1.09	1.26	C.

Monthly discharge of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1910–1915.

[Present site; drainage area, 48 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1910.						
May 14–31	138	28	55.8	1.16	0.73	
June	389	(a)	92.9	1.94	2.16	
July	42	(a)	12.3	.256	.29	
August	61	(a)	12.3	.256	.29	
September	28	(a)	8.18	.170	.19	
1910–11.						
October	8.1	(a)	1.71	.035	.04	
November	167	(a)	39.1	.815	.88	
December	54	(a)	15.3	.319	.36	
January	188	5.5	50.1	1.05	1.21	
February	33	3.2	21.1	.440	.46	
March	650	18	93.3	1.94	2.24	
April	663	89	184	3.83	4.27	
May	141	17	62.3	1.30	1.50	
June	365	.8	79.1	1.65	1.84	
July	68	(a)	15.9	.331	.38	
August	137	2	23.8	.496	.57	
September	237	20	62.8	1.31	1.46	
The year	663	(a)	53.9	1.12	15.21	
1911–12.						
October	1,280	30	248	5.17	5.96	
November	310	66	133	2.77	3.09	
December	352	45	113	2.35	2.71	
January	258	31	75.6	1.58	1.82	
February	355	44	137	2.85	3.07	
March	1,310	98	353	7.35	8.47	
April	626	94	250	5.21	5.81	
May	486	49	152	3.17	3.66	
June	286	4.2	43.2	.900	1.00	
July	25	(a)	6.24	.130	.15	
August	37	(a)	11.5	.240	.28	
September	52	(a)	17.2	.358	.40	
The year	1,310	(a)	128	2.67	36.42	
1912–13.						
October	303	(a)	37.1	.752	.87	
November	364	33	94.9	1.98	2.21	
December	521	35	115	2.40	2.77	
January	504	47	167	3.48	4.01	
February	170	23	49.7	1.03	1.07	
March	1,120	40	209	4.34	5.00	
April	469	37	132	2.75	3.07	
May	485	22	89.7	1.87	2.16	
June	65	(a)	20.8	.435	.49	
July	15	(a)	2.4	.050	.06	
August	27	(a)	3.5	.074	.09	
September	49	(a)	8.2	.170	.19	
The year	1,120	(a)	77.8	1.62	21.99	
1913–14.						
October	872	5.2	100	2.08	2.40	
November	649	28	115	2.39	2.67	
December	252	33	78.7	1.64	1.89	
January	259	19	57.0	1.19	1.37	
February	247	27	65.9	1.37	1.43	
March	1,490	59	232	4.83	5.57	
April	747	134	313	6.52	7.28	
May	373	16	110	2.29	2.64	
June	26	(a)	13.1	.273	.30	
July	53	(a)	13.2	.275	.32	
August	19	(a)	5.39	.112	.13	
September	15	(a)	2.36	.049	.05	
The year	1,490	(a)	92.1	1.92	26.05	

a On certain days the apparent storage release was equal to or greater than the total flow at the diversion dam.

Monthly discharge of Westfield Little River near Westfield, Mass., for the years ending Sept. 30, 1910–1915—Continued.

[Present site; drainage area, 48 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1914–15.						
October	18	(a)	5.2	0.108	0.12	
November	151	(a)	41.7	.869	.97	
December	40	1.6	17.3	.360	.42	
January	925	.5	178	3.71	4.28	
February	1,850	49	251	5.23	5.45	
March	114	21	51.3	1.07	1.23	
April	767	28	140	2.92	3.26	
May	228	26	81.3	1.69	1.95	
June	125	3.6	35.0	.729	.81	
July	962	20	112	2.33	2.69	
August	697	19	104	2.17	2.50	
September	78	(a)	20.4	.425	.47	
The year	1,850	(a)	.....	.....	24.25	

a On certain days the apparent storage release was equal to or greater than the total flow at the diversion dam.

BORDEN BROOK NEAR WESTFIELD, MASS.[1]

LOCATION.—At outlet of Borden Brook reservoir in the town of Granville, 2 miles above confluence of Borden and Pebble brooks and about 8 miles west of Westfield.

DRAINAGE AREA.—8 square miles.

RECORDS AVAILABLE.—January 1, 1910, to September 30, 1915.

DETERMINATION OF DISCHARGE.—Flow determined from a continuous record of the head on a 5-foot sharp-crested weir without end contractions; results are then corrected for apparent gain or loss in stored water in the reservoir, but no allowance is made for evaporation.

EXTREMES OF DISCHARGE.—Maximum 24-hour flow recorded: 294 second-feet, October 21, 1911. Minimum flow: Zero at various times when the water apparently released from storage was equal to, or greater than, the flow measured at the weir.

COOPERATION.—Records furnished by the board of water commissioners of Springfield, through E. E. Lochridge, chief engineer.

[1] Formerly described as near Blandford, Mass.

Daily discharge, in second-feet, of Borden Brook near Westfield, Mass., for the years ending Sept. 30, 1910–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910.												
1				1.4		93	15	22	8.1	7.3		
2					3.2	132		22	7.6	7.3		
3				1.5	6.4	57	20	20	7.6	18		12
4					6.4	41	20	17	7.8	7.3		4.7
5				7.9	6.4	59	10	16	10	13		
6				19	6.4	85	20	13	14	1.8		9.9
7				14	6.5	95	10	10	17	18		
8				11	6.5	62	21	8.6	20	18		
9				11	6.5	71	10	9.0	23	7.3		
10				6.5	6.5	45		13	27			9.9
11				9.8	6.5	9.1	10	14	32			
12				9.8	6.5	27	10	13	32			14
13				3.3	13	27	10	12	32			25
14				7.1	6.5	18	10	11	31			
15				3.6	6.5	18	10	10	24			
16					13	18	11	9.4	17		9.5	
17				3.6	6.7	46	11	7.5	18	11		
18					6.7	9.1	21	6.3	19			
19				3.6	13	37	21	7.8	17		4.7	
20					13	27	21	8.6	15			
21				182	47	27	11	9.5	12			
22				98	34	55	11	11	8.3		2.6	
23				210	20	56	5.4	10	5.4			2.0
24				12	14	85	5.4	10	3.3			6.7
25				29	14	135	76	10	2.3			
26				29	14	108	239	10	1.5			
27				12	85	40	108	9.8	1.1			1.7
28				24	152	40	5.0	5.6	13		7.8	
29				24		60	5.0	3.1	7.3		15	24
30				22		97	15	3.3	7.3		3.1	2.9
31				13		49		6.8			16	
1910-11.												
1		8.5		14			20	20	10			20
2		26		15	7.8	7.8	16	20		2.4		9.3
3		43		52			9.0	10				
4		36		23	7.8		18	10				12
5		1.2		15		7.8	27	10	10			
6	7.1	19		7.6	7.8		119	10	42			7.8
7		1.2		7.6			64	10	74			
8		1.2			7.8	7.8	46	10	43			31
9		1.7		7.6			28	10	33			51
10				7.6			28	10	11			31
11					7.8	7.8	28					42
12				7.6			28		43			22
13				7.6		7.8	28	10	43			11
14				7.8	7.8	16	47		33			11
15				7.8		31	48	10	11			11
16				7.8		7.8	38		11			
17					7.8	7.8	19					9.3
18				7.8		7.8	20					11
19	8.1					7.8	20	40	11			
20					7.8	7.8	20	30				
21						7.8	39	20				11
22	.2					23	30					
23	6.5			1.8		16	20	10				
24	8.0				7.8	16	20					11
25	8.0					16	20	10	11			
26	8.1				7.8	25	20	10				11
27				25	7.8	108	10	10				
28				7.8	7.8	51	20	10				
29				7.8		121	10					11
30	6.9					97	20	10				11
31				7.8		36					24	

Daily discharge, in second-feet, of Borden Brook near Westfield, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911–12.												
1	43	9.3	22	22	11	9.0	62	18	62	3.2	.....	10
2	33	34	11	11	.....	8.6	97	18	14	.....	.....	11
3	33	.6	9.3	.4	.....	6.8	105	13	7.8	.....	.....	11
4	33	1.1	11	.4	11	5.0	73	13	3.6	.....	.....	.....
5	22	33	11	33	.....	4.6	54	13	1.3	.....	.....	.....
6	11	22	.....	22	11	3.9	51	13	.4	.....	.....	9.3
7	22	30	11	22	.....	3.5	86	13	.4	.....	.....	.....
8	22	18	.....	.....	.....	3.5	68	18	.4	.....	.....	.....
9	11	14	11	11	11	3.9	60	23	.3	.....	.....	.....
10	11	.....	.....	11	.....	3.9	60	23	.2	.....	.....	.....
11	11	8.7	11	.....	.....	2.8	14	18	.1	.....	0.2	.....
12	.....	15	22	.....	.....	20	31	19	.1	.....	.....	.....
13	11	15	.....	.....	11	34	12	19	.1	.....	.....	14
14	.....	19	22	.....	.....	34	31	13	.1	.....	.....	.....
15	11	41	11	11	.....	101	46	14	.....	.....	.....	.....
16	.....	30	43	.....	11	120	49	48	.....	.....	.....	11
17	9.3	30	30	.....	.....	68	29	59	.....	.....	.....	6.7
18	146	63	33	.....	.....	58	34	30	.....	.....	.....	10
19	128	41	22	4.4	11	58	62	8.0	.....	.....	.....	.9
20	75	41	40	2.2	.....	58	54	3.6	.....	.....	.....	10
21	294	41	11	.....	45	43	24	3.9	.....	.8	.....	.9
22	281	30	55	11	9.3	26	42	2.8	.....	.....	.....	10
23	255	41	65	11	.....	21	14	2.5	.....	.....	.....	.....
24	198	19	17	.....	.....	17	14	5.4	.....	.....	.....	17
25	83	19	33	.....	19	16	16	7.6	6.4	.....	.....	8.2
26	9.3	8.6	33	11	9.3	11	8.0	5.1	.....	6.7	9.1	18
27	19	.....	22	11	5.8	4.4	8.0	2.8	.....	.....	8.2	1.6
28	9.3	7.9	11	11	11	24	14	1.3	.....	.....	6.7	10
29	9.3	8.6	22	.....	9.5	44	14	21	.....	.....	.....	10
30	19	13	33	11	.....	64	17	69	.....	7.4	9.5	.9
31	.....	.....	33	.....	.....	64	.....	77	.....	.....	10	.....
1912–13.												
1	6.7	20	11	58	11	18	25	16	11	.....	.....	.....
2	6.7	11	22	35	10	19	11	2.4	3.1	.....	5.6	.....
3	8.2	9.3	11	28	.....	13	17	8.1	7.2	.....	.....	.....
4	8.2	.....	11	28	5.6	10	28	6.2	4.6	.....	.....	.....
5	.....	.....	11	12	5.0	3.4	13	5.4	2.8	.....	.....	.....
6	.....	11	11	15	4.3	3.4	19	5.0	2.3	.....	1.4	.....
7	7.0	90	11	47	3.1	3.9	16	4.3	2.6	.....	.....	.....
8	.....	101	11	25	2.8	3.5	14	.....	4.3	.....	.....	.....
9	.....	40	.....	33	2.2	14.6	.3	.....	3.6	.....	2.9	.....
10	.....	42	11	15	1.7	19	8.5	.....	.....	.....	.....	.....
11	.....	9.3	.....	15	1.7	17	113	.....	.....	.....	.....	.....
12	.....	22	11	15	.....	32	121	.....	.....	.....	1.4	3.9
13	.....	20	11	15	.....	30	81	.....	.....	15	.....	.....
14	.....	42	.....	15	.....	47	45	.....	.....	.....	.....	.....
15	.....	11	.....	19	.....	98	31	.....	.....	.....	2.9	2.2
16	.....	11	.....	19	.....	65	18	.....	.....	.....	.....	14
17	.....	11	.....	22	.....	45	20	.....	.....	.....	.....	4.4
18	.....	11	.....	36	.....	25	17	.....	.....	.....	1.4	.....
19	.....	11	11	15	.....	26	14	.....	1.1	.....	.....	.....
20	.....	9.3	11	18	.....	46	11	.....	18	.1	.....	.....
21	.....	.....	11	18	9.5	64	.....	10	.....	.....	.....	14
22	.....	.....	.....	17	17	46	6.4	5.7	.....	.....	1.9	9.3
23	78	11	11	29	13	24	6.7	90	.....	.....	.....	.....
24	59	22	11	12	11	19	6.7	78	2.7	.....	.....	9.3
25	29	11	.....	19	.....	162	5.8	41	.....	.....	2.9	.....
26	39	11	11	16	3.8	123	5.0	25	5.6	.....	.....	3.8
27	31	11	22	13	17	164	6.3	12	.....	.....	.....	.....
28	31	11	22	11	13	110	35	103	.....	5.3	.....	.....
29	9.3	11	11	.....	.....	64	25	62	.....	.....	22	.....
30	11	.....	57	5.2	.....	44	11	44	.....	.....	8.2	.....
31	9.3	.....	46	17	.....	48	.....	21	.....	1.4	4.5	.....

Daily discharge, in second-feet, of Borden Brook near Westfield, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	.....	.....	22	8.6	34	94	102	30	.....	.....	.....	.....
2	.....	11	11	7.2	48	82	99	16	.....	.....	.....	.....
3	.....	9.3	22	6.7	29	56	64	20	.....	22	.....	.....
4	.....	9.3	11	6.7	30	54	60	16	.....	.....	.....	.....
5	.....	.....	11	7.2	26	48	38	85	.....	.....	.....	.....
6	.....	.....	.....	7.6	24	30	40	75	.....	.....	.....	.....
7	.....	9.3	87	7.2	11	33	44	39	.....	.....	.....	.....
8	.....	29	43	6.2	16	29	172	30	.....	11	.....	.....
9	.....	161	32	5.8	14	15	132	35	.....	11	.....	.....
10	.....	80	.....	6.4	3.5	22	85	37	.....	.....	.....	.....
11	14	40	22	6.3	9.7	19	66	17	.....	.....	.....	.....
12	5.8	20	22	4.2	6.7	6.9	65	64	.....	.....	.....	.....
13	9.3	20	11	2.8	21	14	62	55	.....	3.0	.....	.....
14	.....	9.3	11	.....	14	13	39	40	.....	.....	.....	.....
15	.....	20	.....	.....	9.5	16	44	28	.....	7.1	.....	.....
16	9.3	20	11	.....	.....	24	44	19	.....	.4	.....	.....
17	.....	.....	11	8.6	5.5	37	78	21	.....	6.7	.....	.....
18	.....	20	9.3	4.2	7.2	26	76	16	.....	.....	.....	.....
19	8.2	20	9.3	3.9	6.7	26	73	14	.....	.....	.....	.....
20	27	31	.....	4.3	6.7	24	116	12	.....	.....	.....	.....
21	18	11	.....	6.6	6.2	13	82	11	.....	.....	.....	.....
22	18	22	9.3	5.8	5.4	19	45	8.2	.....	.....	.....	.....
23	27	20	9.3	5.0	5.0	17	42	4.3	.....	.....	.....	.....
24	34	11	9.3	16	5.0	16	23	4.6	.....	.....	.....	.....
25	92	11	19	20	5.4	16	43	3.9	.....	.....	.....	.....
26	221	.....	9.3	20	5.8	65	76	3.9	.....	.....	.....	.....
27	113	9.3	19	19	5.8	255	76	3.9	.....	.....	.....	.....
28	47	11	2.7	17	5.4	218	53	3.1	5.0	.....	.....	.....
29	47	32	18	16	.....	117	39	.....	.4	.....	.....	.....
30	27	31	9.5	38	.....	66	29	.....	.....	.....	.....	.....
31	27	.....	9.5	47	.....	68	.....	.....	.....	.....	.....	.....
1914–15.												
1	.....	.....	.....	0.5	27.9	21.7	9.3	29.0	.....	6.8	.....	3.8
2	.....	.....	7.7	9.8	18.6	.....	.....	25.8	.....	6.7	.....	3.2
3	.....	.....	.....	.7	18.6	10.8	10.8	9.4	.....	8.1	.....	2.2
4	.....	.....	9.3	3.2	9.3	.....	.....	15.6	.....	6.8	146	.....
5	.....	.....	.....	2.0	9.3	10.8	10.8	12.2	.....	5.4	76.3	.....
6	.....	.....	.....	.....	48.0	18.6	10.8	.....	.....	4.0	37.2	.....
7	.....	.....	.....	71.6	38.7	11.2	21.7	4.7	.....	2.9	24.5	.....
8	.....	.....	7.7	15.5	20.0	11.2	32.5	5.8	.....	127	13.2	.....
9	.....	.....	.....	17.0	20.1	11.2	21.7	5.8	.....	78.2	14.5	.....
10	.....	.....	.....	7.7	18.6	11.2	32.5	5.8	.....	37.5	.....	.....
11	.....	.....	9.3	.....	10.8	11.2	163	5.8	.....	21.2	4.4	.....
12	.....	.....	.....	83.6	9.3	11.2	88.2	4.7	4.0	10.0	1.9	.....
13	.....	.....	.....	20.1	20.1	11.2	37.2	3.5	.....	13.4	1.1	.....
14	.....	.....	7.7	65.0	.....	22.1	24.9	2.3	7.1	.....	.....	.....
15	.....	1.3	7.7	26.3	77.4	11.2	13.9	.....	8.2	2.1	.....	.....
16	.....	17.0	6.1	17.0	60.4	11.2	15.0	.....	17.5	.....	.....	.....
17	.....	15.9	.5	34.1	40.2	11.2	15.0	.....	12.9	.....	.....	12.9
18	.....	6.6	.5	152	20.1	22.1	15.0	.....	9.3	.....	.....	12.4
19	.....	25.2	9.8	127	20.1	12.8	15.0	.....	18.6	.....	.....	.....
20	.....	23.6	.7	54.2	9.3	.4	14.5	.....	9.9	.....	.....	.....
21	.....	8.1	7.7	27.9	10.8	11.2	.6	8.4	11.0	.....	9.5	.....
22	.....	15.9	.....	9.3	9.3	12.8	5.8	9.1	2.2	.....	22.7	37.2
23	.....	23.6	.....	37.2	20.1	11.5	6.2	10.0	2.2	.....	20.4	.....
24	.....	23.6	.....	26.3	243	9.3	5.9	7.3	.....	.....	20.4	9.3
25	.....	.....	9.3	27.9	245	21.7	4.6	4.2	.....	.....	16.9	.....
26	.....	24.7	6.9	9.3	54.2	.....	3.5	3.1	.....	.....	.....	.....
27	.....	.....	1.6	9.3	21.7	10.8	2.8	.....	.....	.....	4.6	.....
28	.....	.....	2.0	18.6	21.7	.....	2.8	.....	.....	6.6	2.8	.....
29	.....	4.6	9.3	9.3	.....	.....	2.8	.....	.....	5.0	3.2	.....
30	.....	7.7	.....	9.3	.....	10.8	42.1	.....	.....	5.0	5.5	.....
31	.....	.....	7.7	9.3	.....	10.8	.....	.....	.....	.....	5.8	.....

NOTE.—Discharge determined by subtracting from the quantity of water passing over the weir the quantity apparently released from the reservoir, or by adding the amount apparently stored in the reservoir, as indicated by elevation of water surface in the reservoir. As no allowance has been made for evaporation and seepage from the reservoir, the results show the natural flow at the outlet of the reservoir only approximately. For days for which discharge is not given, the amount apparently released from storage was equal to or greater than the amount passing over the weir.

Monthly discharge of Borden Brook near Westfield, Mass., for the years ending Sept. 30, 1910–1915.

[Drainage area, 8 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1910.					
January	210	.....	24.8	3.10	3.57
February	152	.....	18.8	2.35	2.45
March	135	9.1	55.7	6.96	8.02
April	239	.....	24.7	3.09	3.45
May	22	3.1	10.9	1.36	1.57
June	32	1.1	14.7	1.84	2.05
July	18	.....	3.52	.440	.51
August	16	.....	1.89	.236	.27
September	25	.....	3.76	.470	.52
1910–11.					
October	8.1	.....	1.71	.214	.25
November	43	.....	4.59	.574	.64
December	.....	.....	.00	.000	.00
January	52	.....	7.94	.992	1.14
February	7.8	.....	3.34	.418	.44
March	121	.....	20.7	2.59	2.99
April	119	9.0	29.3	3.66	4.08
May	40	.....	9.35	1.17	1.35
June	74	.....	12.9	1.61	1.80
July	2.4	.....	.08	.010	.01
August	24	.....	.80	.100	.12
September	51	.....	11.1	1.39	1.55
The year	121	.....	8.44	1.06	14.37
1911–12.					
October	294	.....	58.4	7.30	8.42
November	63	.....	21.8	2.72	3.04
December	65	.....	21.1	2.64	3.04
January	33	.....	6.98	.872	1.01
February	45	.....	6.41	.801	.86
March	120	2.8	30.4	3.80	4.38
April	105	8.0	41.6	5.20	5.80
May	77	1.3	19.2	2.40	2.77
June	62	.....	3.24	.405	.45
July	7.4	.....	.58	.073	.08
August	10	.....	1.41	.176	.20
September	18	.....	5.68	.710	.79
The year	294	.....	18.1	2.26	30.84
1912–13.					
October	78	.....	10.8	1.35	1.56
November	101	.....	18.6	2.32	2.59
December	57	.....	11.5	1.44	1.66
January	58	.....	20.7	2.59	2.99
February	17	.....	4.70	.588	.61
March	164	.....	41.7	5.21	6.01
April	121	.....	24.4	3.05	3.40
May	103	.....	17.4	2.18	2.51
June	18	.....	2.29	.286	.32
July	15	.....	.70	.088	.10
August	22	.....	1.78	.222	.26
September	14	.....	2.03	.254	.28
The year	164	.....	13.1	1.64	22.29
1913–14.					
October	221	.....	24.0	3.00	3.46
November	161	.....	22.2	2.78	3.10
December	87	.....	14.8	1.85	2.13
January	47	.....	10.1	1.26	1.45
February	48	.....	13.1	1.64	1.71
March	255	6.9	49.6	6.20	7.15
April	172	23	66.9	8.36	9.33
May	85	.....	23	2.88	3.32
June	5.0	.....	.18	.022	.02
July	22	.....	1.97	.246	.28
August	.....	.....	.00	.000	.00
September	.....	.....	.00	.000	.00
The year	255	.....	18.8	2.35	31.95

A. HIGH WATER AT LAWRENCE DAM, MERRIMACK RIVER, AUGUST, 1915.

B. WEST BRANCH OF FARMINGTON RIVER NEAR NEW BOSTON, MASS., MARCH 4, 1914.

Monthly discharge of Borden Brook near Westfield, Mass., for the years ending Sept. 30, 1910–1915—Continued.

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).
	Maximum.	Minimum.	Mean.	Per square mile.	
1914–15.					
October			0.00	0.000	0.00
November	25.2		6.59	.824	.92
December	9.8		3.60	.450	.52
January	152		29.1	3.64	4.20
February	245		40.1	5.01	5.22
March	22.1		10.7	1.34	1.54
April	163		21.0	2.62	2.92
May	29.0		5.56	.695	.80
June	18.6		3.43	.429	.48
July	127		11.2	1.40	1.61
August	146		13.9	1.74	2.01
September	37.2		2.70	.338	.38
The year	245		12.1	1.51	20.60

NOTE.—For months for which no maximum or minimum is given see footnote to daily-discharge table.

FARMINGTON RIVER BASIN.

GENERAL FEATURES.

Farmington River is formed at New Hartford, Conn., by the union of its East and West branches. The West Branch, the continuation of the main stream, heads in the western part of the town of Becket, near Becket Mountain; flows southerly and southeasterly through Becket, Otis, Sandisfield, and Tolland to the State line at Colebrook, crosses the northeastern part of Litchfield County, Conn., and passes into Hartford County. Below New Hartford the river continues its southeasterly course to Farmington, where it turns abruptly and flows northeastward to Tariffville. From Tariffville its general course is again southeasterly to Windsor, where the river joins the Connecticut.

In the 20 miles from the head of the West Branch to Colebrook the fall is about 700 feet. The total drainage area of the West Branch above the State line is 103 square miles, of which 92.7 square miles is above the gaging station 1 mile below New Boston. (See Pl. X, *B*.)

The drainage basin contains numerous small lakes and ponds, and the river receives several tributaries from both east and west. The largest tributary, Clam Brook, enters near New Boston.

The basin is fairly well wooded, and lumbering operations are steadily carried on, although the manufacturing of timber products is largely undeveloped owing to lack of transportation facilities. A number of small power sites have been partly developed, but most of the dams are low, giving small head and little storage capacity. A large amount of storage has been developed in Otis reservoir, which occupies a natural reservoir site and is fed by tributaries from the north and east. The operation of this reservoir greatly affects the flow of the stream, especially at low-water periods.

FARMINGTON RIVER NEAR NEW BOSTON, MASS.[1]

LOCATION.—At a highway bridge a quarter of a mile below Clam River and about 1 mile south of New Boston.

DRAINAGE AREA.—92.7 square miles.

RECORDS AVAILABLE.—May 27, 1913, to September 30, 1915.

GAGES.—Barrett & Lawrence water-stagé recorder installed June 11, 1913, on left bank on downstream side of bridge; referred to gage datum by a hook gage inside the well; vertical staff installed May 27, 1913, on bridge abutment is used for auxiliary readings.

DISCHARGE MEASUREMENTS.—Made from a cable or by wading.

CHANNEL AND CONTROL.—Channel rocky and filled with bowlders; a slight shift in control has been caused by removal of rocks from channel.

EXTREMES OF DISCHARGE.—Maximum stage recorded: 7.64 feet, October 26, 1913; approximate discharge, 3,200 second-feet. Minimum stage recorded: 2.22 feet, August 27, 1913; discharge, 4.4 second-feet.

WINTER FLOW.—Discharge relation affected by ice. (See Pl. X, *B*.)

REGULATION.—Flow affected by storage in Otis reservoir about 5 miles above New Boston and by operation of a woodworking shop just above the station.

ACCURACY.—Open-water records good.

Discharge measurements of Farmington River near New Boston, Mass., during 1913–1915.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1913.		*Feet.*	*Sec.-ft.*	1914.		*Feet.*	*Sec.-ft.*
June 9	R. S. Barnes	3.11	64	Mar. 31	C. H. Pierce	4.96	630
13	do	3.68	157	Apr. 9	R. S. Barnes	6.15	1,540
Oct. 9	do	2.30	6.6	9	do	5.60	1,120
9	do	2.70	29.6	9	do	5.00	644
15	do	2.96	42.4	May 24	do	3.36	100
15	do	2.95	41.8	24	do	3.38	102
15	do	2.98	43.9	Aug. 15	C. H. Pierce	3.38	104
1914.				Sept. 10	R. S. Barnes	3.45	141
Jan. 6	R. S. Barnes	[a]3.38	75.1	Dec. 18	do	[a]3.08	40.8
13	do	[a]3.55	87.4	1915.			
28	do	[a]5.31	128	Feb. 3	R. S. Barnes	[a]3.82	151
Feb. 13	do	[a]4.34	162	Mar. 4	do	3.65	151
Mar. 4	do	[a]7.50	345	June 21	C. H. Pierce	3.48	122
31	C. H. Pierce	4.76	520				

[a] Discharge relation affected by ice.

Daily discharge, in second-feet, of Farmington River near New Boston, Mass., for the years ending Sept. 30, 1913–1915.

Day.	May.	June.	July.	Aug.	Sept.	Day.	May.	June.	July.	Aug.	Sept.
1913.						1913.					
1		149	100	118	93	16		115	124	128	32
2		128	58	117	26	17		108	128	132	35
3		108	19	117	12	18		112	124	130	32
4		92	84	112	14	19		112	128	130	32
5		76	92	113	53	20		112	126	115	26
6		76	95	113	80	21		96	120	113	36
7		89	90	115	79	22		36	118	117	149
8		103	92	112	70	23		53	117	95	86
9		65	128	117	62	24		102	120	15	40
10		62	118	112	60	25		100	118	40	26
11		60	132	108	56	26		102	115	96	26
12		158	128	102	57	27	105	105	117	48	23
13		147	128	99	54	28	186	105	126	106	21
14		53	126	102	52	29	650	102	39	112	20
15		74	126	110	40	30	309	99	115	113	23
						31	184		118	108	

[1] Called West Branch of Farmington River in Water-Supply Paper 351.

Daily discharge, in second-feet, of Farmington River near New Boston, Mass., for the years ending Sept. 30, 1913–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	32	121	156	84	280	280	600	337	63	107	110	90
2	51	104	137	99	315	332	980	302	60	70	110	88
3	48	91	131	80	218	368	680	238	60	51	108	60
4	40	84	120	71	232	425	478	224	84	47	106	12
5	35	84	109	71	218	405	375	455	90	102	107	9.6
6	26	71	99	84	156	385	320	805	71	107	107	9.6
7	24	56	191	60	167	368	356	550	58	107	105	30
8	26	60	250	46	145	368	770	415	52	75	102	50
9	22	594	200	34	156	350	1,310	337	63	47	105	70
10	22	744	160	34	167	332	770	286	56	42	107	91
11	18	425	145	34	135	315	600	254	52	54	106	112
12	60	264	135	34	135	298	680	320	49	98	105	131
13	63	179	116	34	125	298	550	625	45	49	108	122
14	42	163	105	38	125	280	415	478	45	98	102	114
15	37	145	102	46	116	264	375	375	52	91	99	106
16	33	135	91	50	107	247	375	302	98	93	98	106
17	28	125	88	60	99	247	435	254	105	90	102	107
18	31	135	77	65	99	232	478	224	105	60	102	110
19	42	160	81	71	91	218	500	162	105	94	102	107
20	58	315	75	65	84	238	600	141	118	112	102	107
21	80	232	73	55	77	224	600	131	114	98	99	106
22	49	191	71	46	71	198	478	112	106	102	98	106
23	40	156	63	42	65	173	356	106	105	102	100	105
24	34	121	84	34	65	141	269	98	105	122	104	104
25	177	127	84	91	60	131	302	91	104	116	108	104
26	940	104	84	116	55	302	770	81	102	116	112	102
27	950	84	73	156	50	980	550	78	102	108	116	21
28	521	77	84	125	46	1,900	395	77	106	104	120	12
29	315	156	84	116	.....	1,060	269	76	107	110	122	65
30	213	196	84	232	.....	680	286	71	108	118	108	90
31	156	.....	80	300	.....	600	.....	67	.....	118	93	.....
1914–15.												
1	65	12	32	50	269	269	77	197	67	116	56	96
2	49	13	42	38	173	210	84	173	61	162	54	80
3	38	13	44	33	151	162	87	162	54	151	105	65
4	36	16	41	29	141	151	82	141	52	151	574	62
5	29	15	36	29	131	131	93	131	47	141	1,060	58
6	27	15	36	39	210	116	141	131	47	141	500	55
7	23	15	35	650	286	108	151	116	47	518	375	52
8	22	14	37	455	197	104	185	151	50	1,700	238	50
9	21	15	37	435	151	105	210	162	47	1,310	185	48
10	16	16	36	375	151	104	224	131	43	550	141	46
11	13	16	40	210	197	87	375	112	41	337	114	44
12	10	16	40	337	173	87	980	105	40	269	98	42
13	10	15	44	680	122	86	525	98	37	224	112	39
14	15	15	47	286	112	77	337	87	32	151	99	37
15	29	16	71	185	141	77	254	81	34	110	84	37
16	27	32	65	141	710	90	197	78	107	90	75	46
17	22	40	54	118	415	65	173	81	162	93	107	49
18	22	40	43	550	302	75	162	90	151	96	87	56
19	15	36	30	980	238	60	162	82	98	99	65	58
20	15	40	40	600	185	71	151	73	151	102	60	58
21	10	36	49	337	162	73	141	71	122	104	55	105
22	7.0	40	49	210	151	75	122	141	86	105	212	122
23	11	36	41	224	162	77	118	162	86	107	415	90
24	13	36	32	375	337	84	118	141	90	96	185	65
25	11	38	34	269	2,000	91	108	114	74	84	151	49
26	8.8	37	34	210	875	87	110	104	60	68	122	43
27	8.8	45	25	162	455	83	112	112	56	65	98	52
28	10	42	23	141	337	79	105	98	71	62	110	49
29	10	49	23	108	.....	75	106	87	62	98	87	44
30	13	40	54	116	.....	71	162	77	62	80	100	41
31	10	.....	67	122	.....	74	.....	74	.....	62	112	.....

NOTE.—Discharge determined from two rating curves—one applicable Oct. 11, 1913, to Mar. 19, 1914, fairly well defined, and the other applicable for the rest of the period, well defined below 1,500 second-feet. Discharge relation affected by ice Jan. 6 to Mar. 19, 1914, Dec. 16, 1914, to Jan. 5, 1915, and Jan. 31 to Feb. 12, 1915. Discharge estimated by means of gage heights, discharge measurements, and weather records as follows: Dec. 4, 8–10, and 15, 1913, Jan. 6 to Mar. 19, 1914, Dec. 16, 1914, to Jan. 5, 1915, and Jan. 31 to Mar. 1, 1915. Discharge interpolated Aug. 23–28, 30, Sept. 7–10, 13, 14, and 20–24, 1914, July 7, 17–19, 21, 22, 24, Aug. 4, 22, 30, Sept. 1, 2, 4–6, 8, 9, and 11–13, 1915, as the water-stage recorder was not working properly.

Monthly discharge of Farmington River near New Boston, Mass., for the years ending Sept. 30, 1913–1915.

[Drainage area, 92.7 square miles.]

Month.	Discharge in second-feet.				Run-off (depth in inches on drainage area).	Accuracy.
	Maximum.	Minimum.	Mean.	Per square mile.		
1913.						
May 27–31	650	105	287	3.10	0.58	C.
June	158	36	96.6	1.04	1.16	A.
July	132	19	109	1.18	1.36	A.
August	132	15	105	1.13	1.30	A.
September	149	12	47.2	.509	.57	A.
1913–14.						
October	950	18	136	1.47	1.70	C.
November	744	56	183	1.97	2.20	C.
December	250	63	111	1.20	1.38	C.
January	300	34	80.0	.863	.99	D.
February	315	46	130	1.40	1.46	D.
March	1,900	131	408	4.40	5.07	C.
April	1,310	269	531	5.73	6.39	C.
May	805	67	260	2.80	3.23	B.
June	114	45	83.0	.895	1.00	A.
July	122	42	90.6	.978	1.13	A.
August	122	93	106	1.14	1.31	C.
September	131	9.6	81.6	.880	.98	C.
The year	1,900	9.6	183	1.97	26.84	
1914–15.						
October	65	7.0	19.9	.215	.25	B.
November	49	12	27.0	.291	.32	B.
December	71	23	41.3	.446	.51	C.
January	980	29	274	2.96	3.41	B.
February	2,000	112	319	3.44	3.58	B.
March	269	60	100	1.08	1.24	A.
April	980	77	195	2.10	2.34	A.
May	197	71	115	1.24	1.43	A.
June	162	32	71.2	.768	.86	A.
July	1,700	62	240	2.59	2.99	A.
August	1,060	54	188	2.03	2.34	A.
September	122	37	57.9	.625	.70	A.
The year	2,000	7.0	136	1.47	19.97	

Days of deficiency in discharge of Farmington River near New Boston, Mass., during the years ending Sept. 30, 1913–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.		
		[a] 1913	1913–14	1914–15
10	1.1	0	2	3
20	2.3	4	5	33
30	3.4	12	12	54
40	4.6	19	26	84
50	5.7	23	44	115
75	8.5	38	90	162
100	11.4	56	145	214
150	17.1	122	250	273
200	22.7	125	270	313
250	28.4	125	286	325
300	34.1	125	300	332
350	39.8	126	315	339
400	45.5	126	327	343
450	51.2	126	333	346
500	56.8	126	338	348
600	68.2	126	344	354
700	79.6	127	353	357
800	90.9	.....	357	358
900	102	.....	358	359
1,000	114	.....	362	361
1,500	170	.....	364	363
2,000	227	.....	365	364
2,500	284	.....	.....	365

[a] May 27 to Sept. 30, 1913.

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

TAUNTON RIVER BASIN.

GENERAL FEATURES.

The headwaters of Taunton River rise in the swamps and small ponds of Plymouth and Bristol counties, in the eastern part of Massachusetts. The main river is formed in the eastern part of the township of Bridgewater by the union of Matfield and Town rivers.

Matfield River, which drains the larger area and is considered the continuation of the main stream, rises in the swamp northeast of Stoughton and flows in general southeasterly to its junction with Town River.

Near East Bridgewater the Matfield is joined by Beaver Brook, which rises in the townships of Whitman and Abington, and near Elmwood it receives Satucket River, which drains several large swamps and ponds of East Bridgewater, Whitman, Abington, Halifax, and Hanson. Town River rises in Stoughton and Easton, flows southward into a swamp of about 7,000 acres, known as Great Cedar Swamp, and from this natural reservoir passes eastward through Bridgewater to its junction with Matfield River at Paper Mill village.

Below this point the general course of the Taunton is southeasterly and southerly to the head of Narragansett Bay, into which it discharges. From the head of Matfield River (called Salisbury Plains River in its upper course) to Narragansett Bay the distance along the stream is about 50 miles.

The principal tributaries of Taunton River are Wenatuxet, Namasket, Mill, and Threemile rivers, the last two entering below tidewater. Wenatuxet River rises in several small ponds in Plympton and Carver and flows in a general westerly course, receiving Raven Brook and Bartletts Brook from the south. Namasket River enters the Taunton near Titicut. In its drainage area are Assawompsett and Long ponds. Mill River rises in Foxboro, Mansfield, and Easton, flows southward into Great Cedar Swamp, and joins the Taunton in the city of Taunton. Threemile River rises in Foxboro and flows southeastward, joining the Taunton at North Dighton. The Taunton is tidal up to East Taunton, where there is about 2½ feet of rise and fall, and it is navigable to Weir Village.

On account of the large number of small ponds and swamps in the area the run-off through the year is fairly uniform, except in the Matfield drainage basin. There are several power plants on the main river and on the branches.

The average rainfall in this region is about 46 inches. On account of the proximity of this basin to the ocean the winters are not severe.

The country as a whole is very flat, swamps are numerous, and not much rock is found. The western portion of the drainage area is clay bottom and the eastern is sandy but fairly fertile. Nearly all the timber has been removed.

MATFIELD RIVER AT ELMWOOD, MASS.

LOCATION.—At the Bedford Street Bridge in the village of Elmwood, in the southern part of the town of East Bridgewater.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Discharge measurements September 29, 1909, to March 5, 1910.

GAGE.—Temporary staff; later replaced by a chain gage attached to the bridge.

DISCHARGE MEASUREMENTS.—Made from the bridge, or by wading.

CHANNEL AND CONTROL.—Bed of stream rocky. One channel at all stages. Control not defined.

REGULATION.—Flow regulated to some extent by dams above the station.

A gage-height record was obtained from September 29, 1909, to July 10, 1910, but on account of the variable backwater at the station from Taunton River it is not considered a true index of the discharge and is not published.

Discharge measurements of Matfield River at Elmwood, Mass., during 1909–10.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*	1909.		*Feet.*	*Sec.-ft.*
Sept. 29	P. M. Churchill	[a] 1.50	34.4	Dec. 17	P. M. Churchill	2.53	61.7
Oct. 1	D. M. Wood	[a] 1.12	11.3				
1	R. J. Coffin	[a] 1.12	11.9	1910.			
21	D. M. Wood	.70	6.0	Jan. 7	P. M. Churchill	4.98	324
Nov. 11	P. M. Churchill	.93	5.7	22	do	5.90	642
11	do	.92	6.1	Feb. 15	Bartlett and Stanford	2.83	70
15	R. J. Coffin	1.22.	6.4	15	do	2.79	66
29	P. M. Churchill	2.26	44.6	19	P. M. Churchill	4.90	328
Dec. 1	T. W. Norcross	1.98	33.4	Mar. 5	L. W. Bartlett	4.72	236
1	R. J. Coffin	2.00	33.1				

[a] Gage height determined from staff gage reading and referred to datum of chain gage by means of curve of relation.

SATUCKET RIVER NEAR ELMWOOD, MASS.

LOCATION.—At a bridge about 200 feet below dam of Carver Cotton Gin Co., about 1½ miles east of Elmwood.

DRAINAGE AREA.—Not measured.

RECORDS AVAILABLE.—Discharge measurements September 29, 1909, to May 7, 1910.

GAGE.—Staff; later, a chain gage.

DISCHARGE MEASUREMENTS.—Made from the bridge, or by wading.

CHANNEL AND CONTROL.—Bed of stream of gravel and sand; at some seasons covered with vegetation. One channel at all stages. Control not defined, owing to the vegetation and backwater from other obstructions.

REGULATION.—At low and medium stages entire flow is regulated by mills above station.

A gage-height record was obtained from September 29, 1909, to July 10, 1910, but on account of the operation of the mills and the variable backwater at the station it is not considered a true index to the discharge and is not published.

Discharge measurements of Satucket River near Elmwood, Mass., during 1909–10.

Date.	Made by—	Gage height.	Discharge.	Date.	Made by—	Gage height.	Discharge.
1909.		*Feet.*	*Sec.-ft.*	1910.		*Feet.*	*Sec.-ft.*
Sept. 29	P. M. Churchill	1.51	27.8	Feb. 9	P. M. Churchill	4.09	155
Oct. 1	D. M. Wood	1.21	14.9	15	T. W. Norcross	2.01	36.0
1	do	1.21	12.8	15	W. S. Stanford	2.96	98.9
21	do	1.09	5.7	15	L. W. Bartlett	3.00	98.1
Nov. 11	P. M. Churchill	1.17	9.3	15	W. S. Stanford	2.90	105
11	do	1.17	6.8	19	P. M. Churchill	4.09	155
29	do	2.55	67.6	Mar. 5	Bartlett and Stanford	4.88	220
Dec. 1	T. W. Norcross	2.30	73.1	8	P. M. Churchill	4.63	191
1	R. J. Coffin	2.32	74.4	16	do	2.99	92.3
17	do	2.39	74.3	17	Bartlett and Stanford	3.08	123
				26	do	1.67	59.5
1910.				May 7	do	1.35	35.1
Jan. 7	P. M. Churchill	4.54	168	7	do	1.35	38.9
22	do	5.75	291				

CHARLES RIVER BASIN.

GENERAL FEATURES.

Charles River rises in the town of Hopkinton, Middlesex County, at altitude 400 feet above sea level; flows southward about 9 miles, then very irregularly northeastward 65 miles to the point at which it enters Boston Bay. Its drainage area comprises 290 square miles, of which 156.3 square miles is above Waban Lake. Distributed along the river are 26 dams, aggregating in height 202 feet, which furnish water power for numerous factories and mills.

The principal tributaries of the river are Mine and Sheppards brooks, Stop River, and Bogastow, Stony, and Beaver brooks. Just above its entrance into Boston Harbor it is joined by Mystic River, which drains an area lying to the north. The Mystic rises just west of Reading, at altitude 100 feet above sea level, and flows southward and southeastward about 16 miles, passing through Richardsons and Burbank ponds and Mystic Lake. The fall from the source of the river to Mystic Lake is 80 feet.

The area tributary to Mystic Lake contains 26.9 square miles, including about 3 per cent of water surface. It was formerly a source of water supply for the city of Charlestown, but was abandoned for that purpose on January 1, 1898. The other lakes in this basin are Wedge Pond, Winter Pond, Horn Pond, and Burbank Pond. Aberjona River, flowing into Burbank Pond in East Woburn, is the principal source of the main stream.

CHARLES RIVER AT WALTHAM, MASS.

LOCATION.—At the city of Waltham. From October 4, 1903, to July 9, 1904, at the plant of the Boston Manufacturing Co., at Moody Street; July 10, 1904, to October 2, 1909, at the dam of the Waltham Bleachery.

DRAINAGE AREA.—October 4, 1903, to July 9, 1904, 157 square miles;[1] July 10, 1904, to October 2, 1909, 169 square miles.

RECORDS AVAILABLE.—October 4, 1903, to October 2, 1909.

DETERMINATION OF DISCHARGE.—Discharge October 4, 1903, to July 9, 1904, determined from records of the horsepower of the wheels in operation in the factory of the Boston Manufacturing Co. and the quantity of water wasting over the dam. Records after July 10, 1904, obtained at the Waltham Bleachery; method not stated.

DIVERSIONS.—Mother Brook diverts water from Charles River at Dedham into Neponset River.

COOPERATION.—Record furnished by Mr. Hiram A. Miller, former chief engineer of the Charles River Basin Commission.

[1] During March, April, and May, 1904, water overflowed from the Stony Brook basin of the Cambridge water supply.

Weekly discharge of Charles River at Waltham, Mass., for the years ending Sept. 30, 1904–1909.

Week ending—	Discharge in second-feet.
1903–4.	
Oct. 10	24
17	99
24	141
31	59
Nov. 7	24
14	64
21	24
28	48
Dec. 5	24
12	17
19	98
26	111
Jan. 2	109
9	24
16	47
23	72
30	87
Feb. 6	85
13	87
20	87
27	158
Mar. 5	239
12	550
19	655
26	665
Apr. 2	789
9	638
16	576
23	502
30	584
May 7	1,267
14	430
21	286
28	226
June 4	195
11	178
18	82
25	76
July 2	49
9	33
16	71
23	113
30	55
Aug. 6	58
13	58
20	45
27	37
Sept. 3	31
10	29
17	92
24	232
Oct. 1	119
The year	201
1904–5.	
Oct. 8	67
15	56
22	68
29	104
Nov. 5	62
12	70
19	98
26	112
Dec. 3	91
10	84
17	66
24	57
31	66
Jan. 7	176
14	525
21	392
28	240
Feb. 4	125
11	145
18	117
25	128
Mar. 4	121
11	174
18	474
25	565
Apr. 1	655
8	577
15	585
22	426
29	315
May 6	223
13	151
20	110
27	162
June 3	78
10	97
17	98
24	139
July 1	192
8	137
15	61
22	40
29	37
Aug. 5	53
12	53
19	46
26	53
Sept. 2	49
9	207
16	292
23	188
30	113
The year	179
1905–6.	
Oct. 7	107
14	57
21	45
28	101
Nov. 4	69
11	67
18	93
25	73
Dec. 2	84
9	155
16	165
23	136
30	218
Jan. 6	238
13	243
20	218
27	323
Feb. 3	306
10	174
17	169
24	253
Mar. 3	406
10	567
17	561
24	372
31	440
Apr. 7	600
14	518
21	514
28	372
May 5	287
12	302
19	236
26	153
June 2	225
9	336
June 16	204
23	158
30	121
July 7	133
14	164
21	127
28	134
Aug. 4	106
11	108
18	162
25	152
Sept. 1	114
8	68
15	53
22	23
29	70
The year	214
1906–7.	
Oct. 6	106
13	93
20	110
27	152
Nov. 3	218
10	166
17	169
24	221
Dec. 1	181
8	193
15	180
22	105
29	145
Jan. 5	311
12	487
19	421
26	406
Feb. 2	390
9	231
16	205
23	205
Mar. 2	141
9	181
16	190
23	547
30	586
Apr. 6	420
13	419
20	498
27	403
May 4	300
11	256
18	317
25	276
June 1	215
8	292
15	255
22	164
29	122
July 6	83
13	41
20	44
27	43
Aug. 3	43
10	29
17	24
24	22
31	19
Sept. 7	15
14	30
21	49
28	60
The year	207

Weekly discharge of Charles River at Waltham, Mass., for the years ending Sept. 30, 1904–1909—Continued.

Week ending—	Discharge in second-feet.	Week ending—	Discharge in second-feet.	Week ending—	Discharge in second-feet.
1907–8.		1907–8.		1908–9.	
Oct. 5	135	June 20	78	Feb. 6	121
12	222	27	37	13	315
19	147	July 4	27	20	418
26	101	11	18	27	654
Nov. 2	96	18	19	Mar. 6	648
9	249	25	31	13	467
16	398	Aug. 1	66	20	383
23	274	8	61	27	357
30	376	15	91	Apr. 3	527
Dec. 7	429	22	87	10	454
14	346	29	31	17	369
21	335	Sept. 5	47	24	472
28	435	12	60	May 1	461
Jan. 4	590	19	13	8	505
11	475	26	9	15	430
18	520			22	300
25	371	The year	239	29	253
Feb. 1	322			June 5	124
8	291	1908–9.		12	161
15	201	Oct. 3	19	19	194
22	429	10	31	26	137
29	447	17	24	July 3	83
Mar. 7	476	24	33	10	49
14	436	31	56	17	21
21	450	Nov. 7	68	24	22
28	505	14	43	31	25
Apr. 4	379	21	48	Aug. 7	33
11	392	28	61	14	26
18	324	Dec. 5	39	21	34
25	242	12	70	28	43
May 2	225	19	81	Sept. 4	51
9	188	26	80	11	27
16	217	Jan. 2	74	18	42
23	197	9	93	25	46
30	158	16	129	Oct. 2	57
June 6	202	23	102		
13	160	30	128	The year	179

MYSTIC LAKE NEAR MEDFORD, MASS.

LOCATION.—About 1½ miles west of Medford.

DRAINAGE AREA.—26.9 square miles, including about 3 per cent of water surface.

RECORDS AVAILABLE.—January, 1878, to December, 1897.

DETERMINATION OF DISCHARGE.—Mystic Lake was used as a source of water supply for the city of Charlestown from 1864 to 1897. The discharge was determined by making allowance for the storage in Mystic Lake and the water pumped for the city supply. The accuracy of the records is doubtful, as no allowance was made for storage in other reservoirs in the basin, the slip of the pumps, nor the flow in a fishway.

COOPERATION.—Entire record furnished by the Metropolitan Water and Sewerage Board of Boston in the calendar-year form and changed to the climatic year by engineers of the Geological Survey.

Yield, in second-feet per square mile, of Mystic Lake basin near Medford, Mass., for the years ending Sept. 30, 1878–1897.

[Drainage area, 26.9 square miles.]

Year.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Mean.
1878	.....	.....	.....	3.08	3.81	4.26	1.98	1.87	0.70	0.42	0.96	0.50	.....
1878–79	0.62	1.57	3.15	1.05	2.24	2.87	3.56	1.69	.87	.47	.61	.43	1.59
1879–80	.29	.40	.60	1.47	2.36	1.69	1.34	.83	.46	.58	.47	.40	.91
1880–81	.31	.39	.51	.71	2.06	5.89	1.95	1.31	1.84	.75	.30	.28	1.36
1881–82	.25	.45	.75	1.19	2.91	3.63	1.04	1.60	.73	.30	.19	.48	1.13
1882–83	.50	.35	.49	.61	1.37	1.63	1.46	1.04	.47	.26	.19	.16	.71
1883–84	.34	.38	.38	1.29	3.61	4.71	3.45	1.28	.76	.50	.52	.21	1.45
1884–85	.23	.31	1.12	1.55	1.74	1.78	1.82	1.89	.77	.41	.47	.30	1.03
1885–86	.59	2.16	2.07	2.00	7.39	3.39	2.90	1.10	.49	.36	.22	.29	1.91
1886–87	.33	.79	1.24	2.74	3.47	3.12	3.36	1.64	1.14	.75	1.17	.43	1.68
1887–88	.49	.64	.79	1.24	3.08	3.71	2.93	2.50	.75	.34	.47	1.17	1.51
1888–89	2.38	4.52	4.41	3.91	1.76	1.39	2.03	1.89	1.69	1.15	1.78	.95	2.32
1889–90	1.05	2.23	2.65	1.80	2.14	4.66	2.63	2.60	1.72	.37	.40	.52	1.90
1890–91	2.26	1.75	2.16	5.46	5.73	6.25	3.07	1.21	.91	.36	.38	.38	2.49
1891–92	.50	.50	.76	2.16	1.63	2.63	1.19	1.82	1.05	.57	.43	.50	1.14
1892–93	.39	.96	.76	.65	2.05	3.92	2.44	3.83	.93	.41	.60	.37	1.44
1893–94	.48	.64	1.10	1.19	1.80	2.65	2.03	1.14	.82	.43	.33	.32	1.08
1894–95	.50	.82	.78	1.34	.84	2.74	2.64	.98	.48	.52	.69	.32	1.05
1895–96	1.27	2.12	1.84	1.60	3.15	3.90	2.92	.67	.67	.34	.29	.95	1.64
1896–97	.77	1.00	1.07	1.21	1.34	3.00	1.92	1.59	1.96	.43	.82	.37	1.29
1897	.34	.91	1.70	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Summary of yield and rainfall in Mystic Lake basin near Medford, Mass., for the years ending Sept. 30, 1879–1897.

[Drainage area, 26.9 square miles.]

Month.	Average yield per square mile.	Run-off.		Rainfall.[a]
		Depth in inches on drainage area.	Per cent of rainfall.	
	Sec.-ft.			*Inches.*
October	0.71	0.82	20.6	3.98
November	1.16	1.29	34.0	3.79
December	1.40	1.61	46.4	3.47
January	1.75	2.02	48.0	4.21
February	2.67	2.80	69.3	4.04
March	3.35	3.86	103.8	3.72
April	2.35	2.62	86.8	3.02
May	1.61	1.86	51.1	3.64
June	.97	1.08	33.8	3.20
July	.49	.56	15.6	3.58
August	.54	.62	15.5	4.00
September	.46	.51	16.1	3.17
The year	1.45	19.65	44.8	43.82

[a] Average for 20 years, 1878–1897.

MERRIMACK RIVER BASIN.

GENERAL FEATURES.

Merrimack River is formed near Franklin, N. H., by the union of Pemigewasset and Winnepesaukee rivers. The Winnepesaukee is a short stream flowing southwestward from Lake Winnepesaukee; the Pemigewasset, generally considered the head of the main stream, is the outlet of Profile Lake in Franconia, N. H., 50 to 60 miles north of Franklin and less than 10 miles from Mount Washington. From Franklin the Merrimack flows southward about 60 miles, crosses into Massachusetts, and a few miles below the State line, as it approaches the city of Lowell, turns abruptly to the east and flows easterly and northeasterly to the ocean at Newburyport. Its total length, including the Pemigewasset, is about 165 miles, of which 47.5 miles is in Massachusetts. Of its 5,015 square miles of drainage area, about 1,200 square miles is in Massachusetts, 211 square miles lying in the Nashua, Sudbury, and Lake Cochituate drainage areas, from which water is permanently diverted for the supply of the metropolitan district adjacent to Boston. A view of the Wachusett reservoir of this system is given in Plate XI.

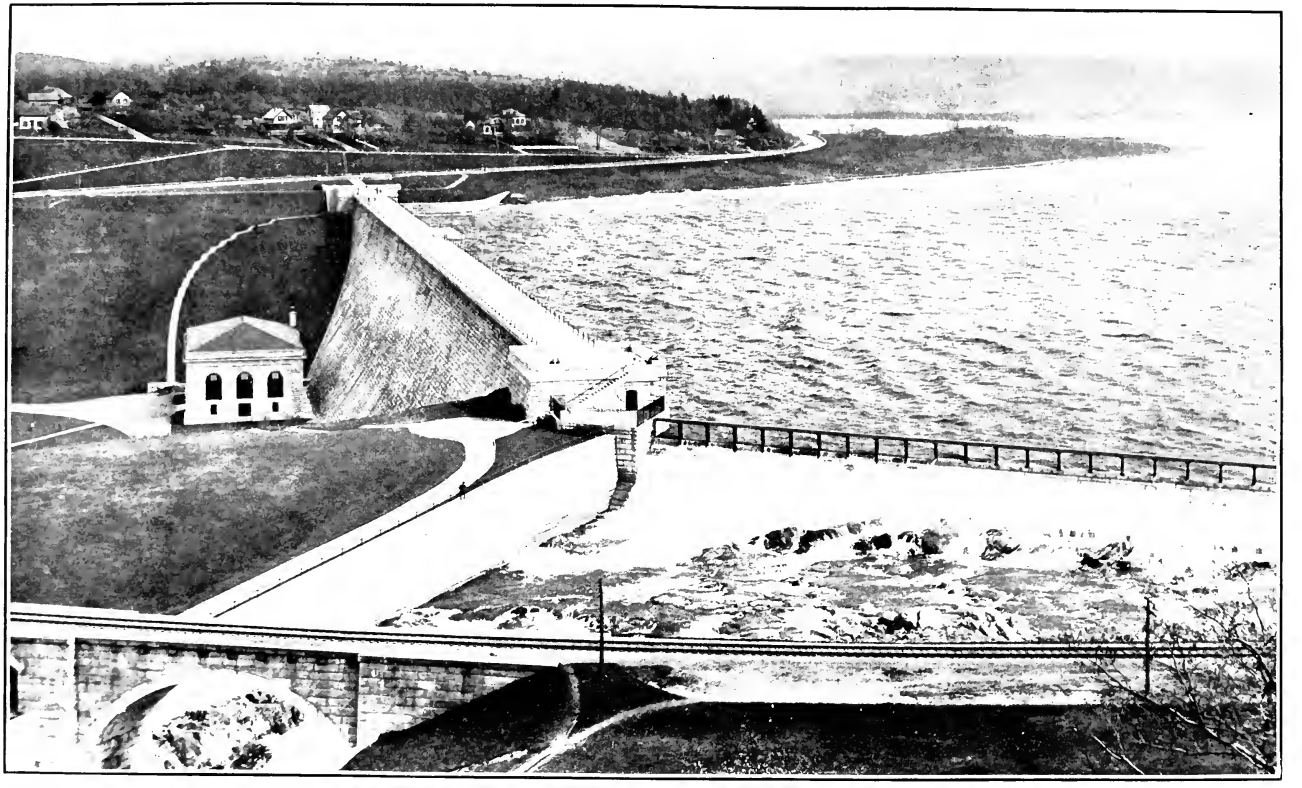
Important tributaries of the Merrimack, other than the headwater streams, are Contoocook, Suncook, Piscataquog, Souhegan, and Nashua rivers. Nashua River lies nearly all in Massachusetts but enters the Merrimack near Nashua, N. H. The other tributaries mentioned are all in New Hampshire.

The headwaters of the Pemigewasset reach an elevation approximately 2,000 feet above the sea; at Franklin the river is at an elevation of about 270 feet. The upper part of the basin is rough and mountainous and very largely in forest. Below Franklin the country is more uniform in topography and much of it is farm land.

The main river flows in reaches of moderate slope separated by falls over rock ledges. It is navigable as far as Haverhill, and for small boats as far as Lawrence.

The mean annual rainfall in this basin is about 42 inches, ranging from about 46 inches at Lowell to about 38 inches at Plymouth, but is probably much greater in the mountainous regions near the head of the Pemigewasset than elsewhere in the area. During the winter the streams are generally frozen, and especially in the northern parts of the region there is usually a heavy fall of snow.

The basin of the Merrimack is well supplied with natural facilities for storage, the combined area of lakes and ponds amounting to approximately 183 square miles. About 105 square miles of this is contained in Lake Winnepesaukee—next to Moosehead Lake the largest body of water in New England—which has about 4 feet of



WACHUSETT DAM NEAR CLINTON, MASS., MAY 12, 1908.

available depth of storage, corresponding to somewhat less than 8 billion cubic feet.

An act approved April 7, 1911, provides that between June 1 and September 15 of any year not more than an average of 250 second-feet for any week shall be drawn from the lake when the level is 21 inches or less. From records maintained from 1860 to date it appears that the highest gage height recorded is 44 inches, which occurs when the lake is full. This stage has been recorded during 30 years since 1860. The lowest recorded stage was $-11\frac{1}{4}$ inches and occurred in February, 1911, the total recorded range thus being $55\frac{1}{4}$ inches.

Squam Lake, tributary to the Pemigewasset through Squam River at Ashland, is nearly 15 square miles in area. This lake can be drawn down 50 inches. Newfoundland Lake, with half the water area of Squam Lake, is also tributary to the Pemigewasset. It can be drawn down 58 inches.

The storage on all these lakes and on numerous smaller ones is controlled by users of water power on the river and greatly improves the regimen of low-water flow. In a general way, the most favorable opportunities for storage on the Merrimack are being utilized, but in the upper parts of the drainage basin there are still many unutilized reservoir sites.

The Merrimack is world famous for its developed water powers. Lawrence, Lowell, and Manchester are great industrial centers, devoted largely to cotton and woolen manufactures, and owe their location to the excellent water power available at their sites. There are only one or two sites remaining for power development on the main river, but on the tributaries, especially the Pemigewasset and its tributaries, there is a large amount of unutilized fall. Records of flow during hours when mills were running have been kept at Lowell for many years. Run-off records showing the mean daily flow of the river at Lawrence extend back to 1879; the driest year was 1910–11; the wettest 1890–91; the total flow during these two years was about in the ratio of 1 to 2.72.

Drainage areas of Merrimack River and some of its principal tributaries are given in the following table:

Drainage area of Merrimack River and tributaries.

River.	Locality.	Drainage area.	River.	Locality.	Drainage area.
		Sq. miles.			*Sq. miles.*
Merrimack	Mouth	5,015	Winnepesaukee	Junction with Pemigewasset.	435
Do	Lawrence dam	4,664			
Do	Lowell dam	4,127	Contoocook	West Hopkinton	410
Do	Garvins Falls	2,340	Do	Mouth	750
Do	Franklin Junction	1,460	Suncook	East Pembroke	250
Pemigewasset	Plymouth	615	Do	Mouth	270
Do	Junction with Winnepesaukee.	1,085			

MERRIMACK RIVER AT LOWELL, MASS.

LOCATION.—At the Boott Mills in Lowell.

DRAINAGE AREA.—4,097 [1] square miles above Pawtucket dam. March 7, 1898, the Metropolitan Water Board [2] of Boston diverted the flow of South Branch of Nashua River, which reduced the drainage area 118 square miles.

RECORDS AVAILABLE.—January 1, 1848, to May 31, 1861; March 1, 1866, to September 30, 1915.

GAGE.—Vertical staff in three sections on right bank. Low-water section attached to rollway wall, upper section to foundation wall of Boott Mills. Gage read once a day at approximately 10.45 a. m.

DETERMINATION OF DISCHARGE.—Rating curves (Pl. XII) determined from quantity of water flowing through the canals and water wheels, and leaking and wasting over Pawtucket dam at various stages. Tables show only the flow for the 10 hours during which mills were operating.

CHANNEL AND CONTROL.—Bed of stream smooth and regular; right bank a vertical mill wall over half a mile long; left bank high and rarely overflows even during spring floods. Control probably at "Hunts Falls," a short distance below station. Control has been altered at various times by removal of ledge rock, bowlders, and other material. During recent years zero flow occurred at gage height of about 38.5 feet, referred to datum of gage owned by the Proprietors of Locks and Canals on Merrimack River.

EXTREMES OF DISCHARGE.—Maximum stage recorded 1848–1915: 64.20 feet, April 23, 1852; discharge, 83,000 second-feet. Practically zero flow on nights, Sundays, and holidays during low-water season, as water is stored above dam when mills are not in operation.

WINTER FLOW.—Discharge relation only slightly affected by ice.

DIVERSIONS.—Almost the entire flow of South Branch of Nashua River is diverted for water supply of metropolitan district of Boston.

REGULATION.—Practically the entire low-water flow is regulated by dams and mills above station. Tables of discharge show only the 10-hour flow during periods when mills are in operation. In very dry seasons entire flow is stored during nights, Sundays, and holidays.

ACCURACY.—Record considered reliable, although rating for earlier years is somewhat uncertain.

COOPERATION.—Entire record furnished by the Proprietors of Locks and Canals on Merrimack River, Lowell, Mass., through Arthur T. Safford, assistant engineer.

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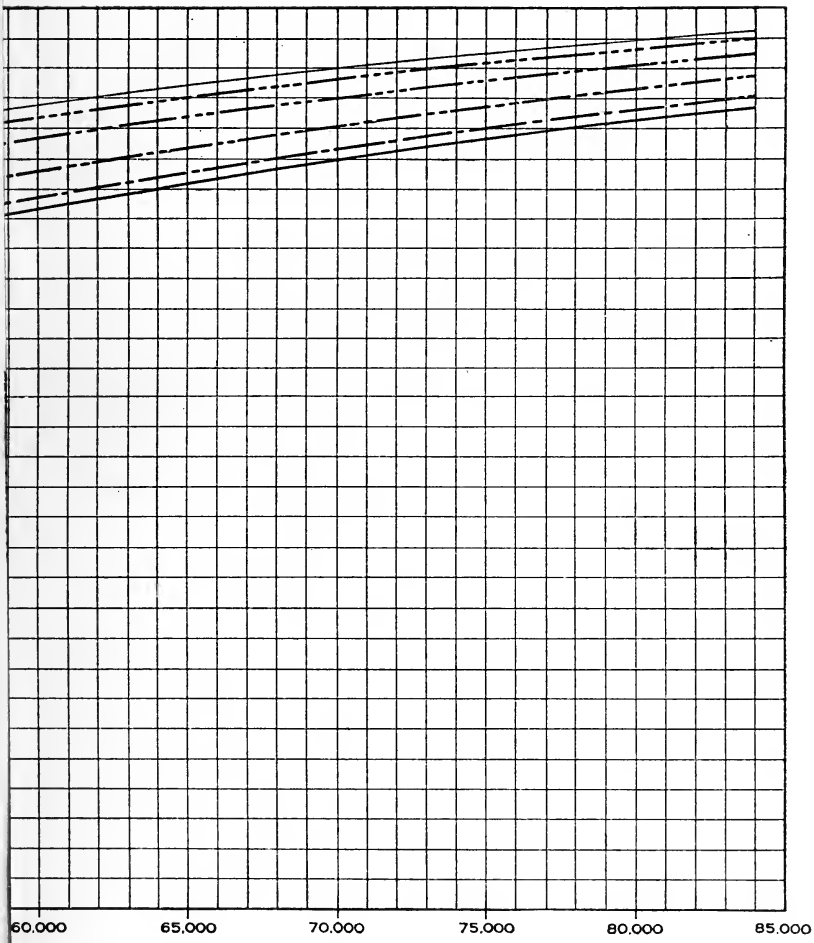
[1] Examination of water supplies: Mass. State Board of Health Rept., pt. 1, p. 442, 1890.

[2] Metropolitan Water Board Fourth Ann. Rept., p. 15, Jan. 1, 1899.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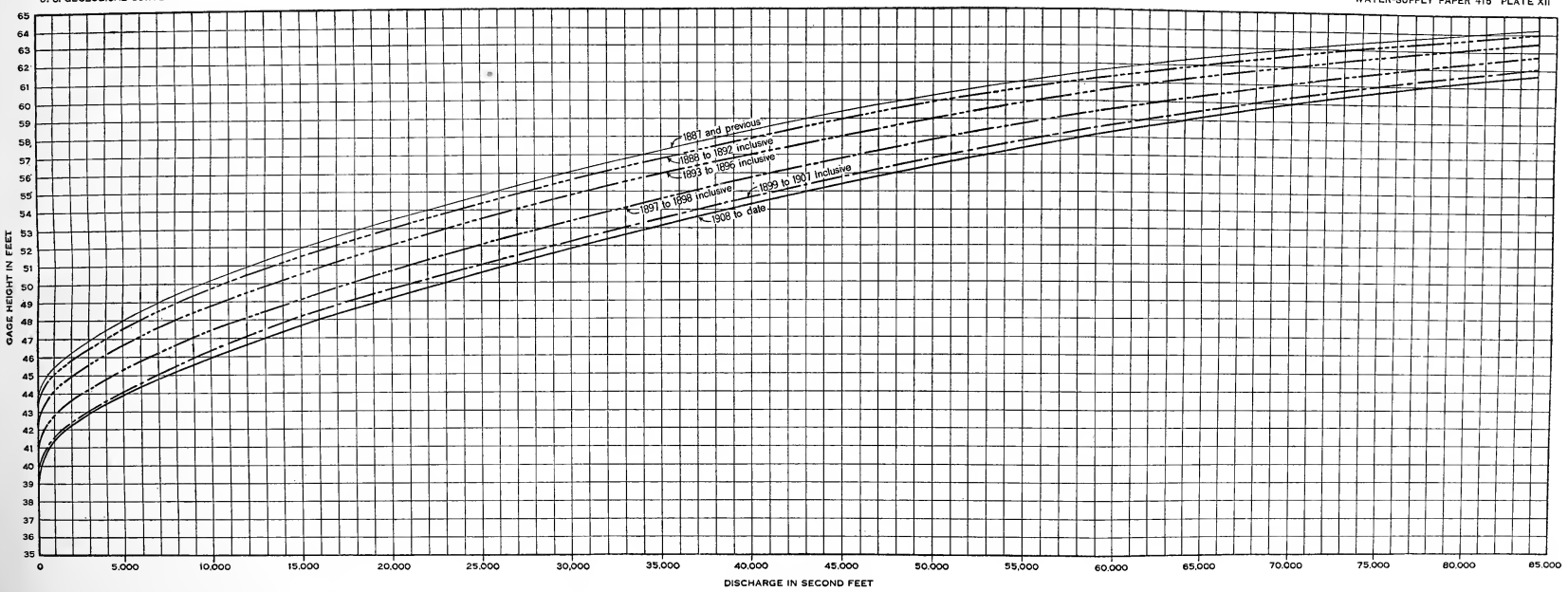

RATING CURVES FOR MERRIMACK RIVER AT LOWELL, MASS.

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915.

Day.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1848.									
1	9,100	7,700	5,790	16,625	6,500	12,560	5,140	4,860	5,020
2	.....	7,860	5,360	.....	6,850	10,730	.....	4,780	4,640
3	10,050	7,075	4,900	17,340	8,720	9,275	5,220	5,500	.....
4	9,725	6,975	5,060	13,625	17,100	.....	.....	5,200	4,560
5	8,840	6,650	.....	12,010	20,900	7,860	6,250	4,520	4,400
6	7,550	.....	5,280	.....	15,850	7,700	6,600	.....	4,480
7	7,075	7,075	4,820	11,740	.....	8,025	5,950	4,480	4,400
8	6,340	7,075	5,060	10,500	13,470	8,275	5,600	4,400	4,360
9	.....	6,460	5,950	.....	13,140	8,780	.....	4,440	4,360
10	6,890	6,340	9,000	8,840	11,740	8,500	5,060	4,240	.....
11	8,075	6,500	9,425	8,560	11,175	.....	4,980	4,140	4,400
12	7,075	6,300	.....	8,600	15,990	7,175	4,860	4,240	4,280
13	6,500	.....	9,675	8,660	18,860	6,790	4,820	.....	4,240
14	6,075	5,950	9,100	8,900	.....	6,500	5,240	4,320	4,060
15	6,340	6,125	8,275	10,270	14,150	5,790	5,200	4,240	4,060
16	.....	6,075	7,820	.....	14,470	5,950	.....	4,140	4,020
17	13,140	5,790	7,175	9,625	12,900	5,750	5,140	4,140	.....
18	13,350	5,240	6,890	9,150	13,995	.....	4,820	4,100	4,740
19	11,620	5,360	.....	8,900	10,390	5,500	4,560	4,360	4,740
20	9,725	.....	6,500	8,660	9,525	5,600	4,480	.....	5,870
21	7,650	5,400	7,600	8,900	.....	6,075	4,320	9,525	5,950
22	7,275	5,600	11,500	8,275	9,475	6,500	4,160	6,975	5,360
23	.....	5,990	13,675	.....	11,300	6,125	.....	5,790	5,320
24	6,890	6,420	13,020	7,860	11,500	5,790	4,400	5,140	.....
25	6,380	6,550	11,400	7,860	10,500	.....	4,480	4,900	4,860
26	6,340	6,125	.....	7,820	9,900	5,280	4,640	4,780	4,780
37	6,600	.....	10,050	7,600	9,325	5,060	4,600	.....	4,780
28	10,450	5,600	10,850	7,075	.....	4,900	4,560	4,640	4,860
29	11,075	5,600	12,700	6,790	8,600	4,980	5,240	4,640	4,740
20	.....	.....	16,425	.....	8,175	5,060	.....	4,560	4,600
31	8,540	.....	17,280	.....	8,720	.....	5,240	4,600	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1848-49.												
1	.....	6,500	6,225	6,750	6,125	4,940	.....	7,700	8,325	.....	4,280	4,700
2	4,700	6,300	5,950	6,420	5,870	4,980	25,100	7,500	9,825	4,820	4,240	.....
3	4,980	6,030	.....	7,375	5,500	4,980	17,995	7,175	.....	4,740	.....	5,060
4	7,860	5,240	8,420	7,500	.....	.....	14,250	7,175	8,540	.....	4,240	4,900
5	11,300	.....	8,225	8,325	5,400	4,980	12,800	6,700	9,000	4,780	.....	4,740
6	9,325	8,780	7,550	9,100	5,500	4,820	12,800	.....	10,150	4,740	4,320	4,560
7	7,780	14,980	8,275	.....	5,320	4,900	13,410	7,175	8,900	4,740	4,280	4,560
8	.....	11,025	9,100	8,660	5,870	4,980	.....	6,890	7,860	.....	4,140	4,560
9	6,340	8,840	9,100	6,850	5,240	4,980	10,500	6,700	7,175	4,740	4,140	.....
10	5,790	7,860	.....	6,650	5,790	5,060	10,270	6,700	.....	4,560	4,140	5,060
11	5,750	7,025	10,575	6,790	.....	.....	9,950	6,790	6,700	4,560	4,240	4,780
12	5,400	.....	11,025	6,975	5,400	4,820	.....	6,700	6,340	4,400	.....	4,560
13	5,240	6,225	10,150	6,700	6,125	4,820	9,725	.....	6,125	4,360	14,590	4,480
14	5,060	6,125	8,900	.....	5,450	4,900	9,100	7,780	5,950	4,240	13,855	4,520
15	.....	6,075	8,420	5,950	5,400	5,060	.....	14,350	5,690	.....	10,790	4,520
16	5,020	5,950	8,025	6,340	5,400	5,400	8,275	15,220	5,600	4,560	8,720	.....
17	4,860	5,910	.....	6,340	5,400	5,400	7,860	11,450	.....	4,400	7,700	4,480
18	4,980	5,790	8,460	6,500	.....	.....	7,600	9,625	5,320	4,400	6,500	4,400
19	5,240	.....	8,660	6,650	5,240	5,790	7,600	8,900	5,140	4,400	.....	4,400
20	8,660	5,600	8,275	6,600	5,060	5,870	8,075	.....	4,900	4,360	5,790	4,400
21	11,800	5,400	7,900	.....	5,060	7,175	8,460	7,860	4,820	4,320	5,600	4,280
22	.....	5,500	7,700	5,600	4,560	11,740	.....	7,500	4,820	.....	5,240	4,120
23	8,025	5,400	5,950	5,320	4,560	14,980	7,860	7,600	4,740	4,400	4,900	.....
24	6,975	5,400	.....	5,160	4,560	14,200	7,700	7,375	.....	4,360	5,450	4,400
25	6,500	5,600	.....	5,060	.....	.....	7,700	7,500	4,780	4,360	6,500	4,240
26	6,175	.....	6,790	5,400	4,900	11,175	8,540	8,275	4,700	4,320	.....	4,400
27	6,125	8,500	7,600	6,250	4,860	13,080	8,075	.....	4,740	4,320	5,790	4,440
28	5,950	7,700	7,175	.....	4,900	13,080	7,550	7,375	4,700	4,240	5,320	4,400
29	.....	6,850	6,930	7,275	.....	16,250	.....	6,975	4,740	.....	4,980	4,280
30	5,690	.....	6,790	6,930	.....	20,185	7,700	6,700	4,700	4,400	4,940	.....
31	5,950	.....	.....	6,890	.....	26,600	.....	7,075	.....	4,320	4,740	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1849–50.												
1	4,480	11,300	7,700	6,340	7,075	8,420	8,075	40,150	17,820	8,600	6,075	.....
2	4,480	10,330	.....	6,300	7,225	8,325	8,900	26,200	.....	8,275	6,790	5,750
3	4,480	7,600	7,700	6,030	.....	.....	10,270	18,780	14,150	8,175	6,890	6,030
4	4,480	.....	7,075	5,910	7,500	8,125	13,525	15,220	13,020	.....	.....	12,225
5	4,560	6,600	6,600	5,910	7,550	7,075	23,100	.....	12,175	10,675	7,950	13,350
6	4,640	6,500	7,125	.....	7,450	7,075	22,500	16,250	11,250	9,275	8,900	11,350
7	.....	6,600	7,125	6,225	6,700	8,225	.....	33,300	10,500	.....	8,075	9,425
8	7,275	6,600	6,340	5,600	6,600	9,475	15,100	32,200	9,775	7,075	7,125	.....
9	9,200	6,975	.....	5,690	6,125	8,900	14,470	23,500	.....	6,500	6,380	12,800
10	8,275	16,250	6,300	5,690	.....	.....	14,150	22,900	9,675	6,125	5,950	12,225
11	7,860	.....	6,340	5,830	11,500	8,175	.....	24,000	11,950	5,830	.....	10,730
12	10,850	32,700	6,420	5,910	15,610	7,950	11,620	.....	14,980	5,600	5,870	9,275
13	15,550	23,000	6,225	.....	16,625	7,700	11,300	15,610	12,750	5,400	5,500	8,375
14	.....	16,625	5,910	6,890	14,250	8,425	.....	13,995	10,730	.....	5,600	7,700
15	10,050	13,525	5,910	6,700	13,525	12,010	11,075	12,850	9,525	5,500	7,175	.....
16	8,660	11,620	.....	6,500	12,900	14,590	10,625	13,575	.....	5,400	7,275	6,890
17	7,700	10,390	6,125	6,225	.....	.....	10,150	16,130	8,175	5,790	6,700	6,600
18	7,075	.....	6,380	6,075	10,675	13,140	9,625	15,990	7,780	5,910	.....	6,420
19	6,700	8,780	6,420	5,950	10,270	11,800	9,325	.....	7,375	5,450	5,690	6,225
20	6,340	9,425	6,380	.....	9,525	10,730	9,525	12,380	7,375	5,910	5,550	6,225
21	.....	14,350	6,500	5,650	9,525	9,325	.....	12,010	6,975	.....	5,320	6,030
22	5,950	15,610	6,790	6,500	9,100	9,050	9,900	15,040	6,650	14,980	5,240	.....
23	6,030	12,900	.....	7,550	8,720	9,050	11,175	16,695	.....	10,790	5,020	5,830
24	6,340	11,125	7,275	7,900	.....	.....	13,575	15,340	7,500	8,440	4,900	5,870
25	6,100	.....	.....	8,025	7,900	8,500	14,470	14,410	8,075	7,375	.....	5,500
26	5,950	9,625	6,500	7,860	7,860	8,225	13,855	.....	7,740	6,650	7,275	5,320
27	5,790	9,275	6,650	.....	8,275	7,780	14,920	17,400	7,225	6,125	10,625	5,320
28	.....	8,780	6,600	8,025	8,420	7,860	.....	24,500	6,850	.....	10,150	5,910
29	5,550	.....	6,420	7,900	.....	7,860	24,800	24,500	6,890	5,690	8,325	.....
30	5,790	8,075	.....	8,125	.....	7,780	29,400	22,500	.....	5,400	7,175	6,225
31	8,600	.....	6,175	7,700	.....	.....	.....	20,030	.....	5,750	6,460	.....
1850–51.												
1	5,830	7,550	.....	5,910	7,500	14,150	13,140	9,325	.....	5,060	3,620	4,480
2	5,200	6,975	9,950	5,950	.....	.....	15,160	10,270	7,550	5,020	3,340	4,480
3	5,790	.....	8,500	5,600	5,910	12,275	13,855	10,450	6,930	5,060	.....	4,360
4	6,380	6,420	7,860	5,790	5,790	11,025	13,925	.....	6,550	.....	4,900	4,240
5	7,500	6,225	8,025	.....	5,500	10,390	13,020	9,100	6,175	6,550	4,780	4,240
6	.....	6,125	7,900	5,750	5,450	10,270	.....	9,950	5,790	.....	4,740	3,925
7	6,380	5,950	7,700	5,360	5,990	10,330	11,300	10,850	5,240	6,930	4,640	.....
8	5,950	5,750	.....	5,910	5,830	10,100	12,960	10,390	.....	5,990	4,640	4,280
9	5,690	5,600	6,700	5,550	.....	.....	13,260	9,625	5,990	5,750	4,600	4,280
10	5,600	.....	6,500	5,320	6,030	9,100	.....	9,200	8,225	5,790	.....	4,200
11	5,320	5,360	6,030	5,450	5,830	8,780	14,530	.....	9,525	5,600	4,900	4,120
12	5,240	5,240	5,950	.....	7,780	8,840	12,225	9,275	8,500	5,500	4,780	4,060
13	.....	5,240	5,910	5,650	9,275	8,500	.....	10,390	7,500	.....	4,860	4,060
14	5,060	5,100	5,910	5,600	10,270	7,900	10,270	10,970	6,930	5,240	4,820	.....
15	4,980	5,060	.....	5,550	10,575	7,950	9,725	11,350	.....	4,980	5,140	4,360
16	4,940	5,060	5,500	5,500	.....	.....	11,740	10,450	5,870	4,980	4,900	4,320
17	4,900	.....	5,690	5,600	18,550	7,950	19,020	9,325	6,550	4,900	.....	4,200
18	4,740	5,910	6,460	5,790	19,400	7,900	20,185	.....	6,340	4,820	4,780	4,160
19	4,820	6,500	5,950	.....	16,275	7,550	17,750	8,900	6,340	4,640	4,560	4,060
20	.....	6,340	5,500	5,750	13,470	7,550	.....	8,540	6,200	.....	4,480	3,790
21	5,320	5,870	5,690	5,600	12,380	7,780	15,340	8,175	5,950	6,600	4,400	.....
22	5,400	5,650	.....	5,450	15,100	7,925	16,130	8,275	.....	6,650	4,400	4,240
23	5,140	5,400	5,690	5,400	.....	.....	15,280	8,780	5,950	5,650	4,520	4,240
24	5,060	.....	5,770	5,320	16,625	9,275	13,575	8,275	5,600	5,200	.....	.....
25	4,940	5,240	.....	5,280	15,850	10,150	12,325	.....	6,850	4,980	5,020	4,280
26	4,940	5,060	5,990	.....	17,750	10,550	11,300	7,375	6,790	4,820	4,900	4,140
27	.....	5,060	5,600	5,550	16,625	10,050	.....	6,790	6,225	.....	4,820	4,060
28	13,525	.....	5,690	5,600	14,890	10,150	9,850	6,890	5,950	4,940	4,640	.....
29	12,850	6,750	.....	5,450	.....	11,450	9,425	7,075	.....	4,900	4,560	4,320
30	10,050	8,660	5,950	6,340	.....	.....	9,275	5,650	5,240	3,590	4,440	4,240
31	8,540	.....	6,030	7,125	.....	12,325	.....	6,075	.....	3,620	.....	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1851–52.												
1	4,200	21,825	7,125	11,300	.....	7,075	9,950	18,490	8,720	4,900	.....	8,275
2	4,240	.....	.....	17,400	5,990	6,460	10,390	.....	8,325	4,980	4,640	6,600
3	4,240	10,000	6,790	17,280	6,030	6,850	10,625	16,625	7,860	5,790	4,640	5,690
4	4,240	9,625	6,975	.....	5,790	6,890	.....	15,400	6,340	.....	4,680	5,360
5	.....	8,460	6,890	12,010	5,600	6,030	9,375	14,920	6,380	.....	4,640	.....
6	4,400	7,375	6,790	10,390	5,600	5,950	9,000	14,250	.....	5,750	4,640	5,100
7	4,240	6,650	.....	9,525	5,650	.....	9,375	14,470	5,990	5,320	4,560	4,900
8	4,100	6,125	6,420	8,900	.....	5,790	.....	15,400	5,790	5,140	.....	4,640
9	4,060	.....	6,340	7,780	5,830	5,950	9,825	.....	5,830	4,860	4,780	4,560
10	4,060	5,690	6,125	7,820	5,690	6,790	10,150	16,890	6,225	4,820	4,820	4,560
11	3,955	5,600	6,340	.....	5,790	8,500	.....	16,375	8,325	.....	4,780	4,440
12	.....	5,320	5,750	7,860	7,225	9,625	11,300	14,710	6,750	4,740	4,740	.....
13	4,320	5,240	5,550	7,700	9,375	10,330	12,175	14,590	.....	4,740	4,600	4,860
14	4,280	5,160	.....	7,275	11,450	.....	11,740	16,060	5,830	4,740	4,440	5,870
15	6,420	5,280	5,360	7,225	.....	14,590	12,010	15,100	.....	4,740	.....	5,750
16	5,790	.....	5,200	7,175	10,000	16,485	15,340	.....	5,360	4,560	4,740	5,280
17	4,820	10,625	5,550	6,890	9,275	16,375	16,200	12,750	5,240	4,560	4,560	5,100
18	4,480	9,375	5,910	.....	8,375	15,100	.....	12,225	5,320	.....	4,480	4,900
19	.....	8,025	5,950	7,075	7,950	13,140	18,250	12,900	5,240	4,780	4,400	.....
20	4,640	7,225	5,360	8,225	7,450	11,680	27,400	11,680	.....	4,740	4,400	4,900
21	4,900	7,075	.....	8,375	7,025	.....	42,500	10,270	5,320	4,660	4,280	4,860
22	5,400	12,650	5,870	8,420	.....	9,525	68,500	9,625	5,240	4,520	.....	4,740
23	5,140	.....	5,320	8,500	6,380	9,200	71,000	.....	5,240	4,640	4,480	4,740
24	4,820	13,925	5,600	8,420	6,340	8,950	51,500	9,000	5,600	4,400	4,520	4,740
25	4,600	11,250	.....	.....	6,340	9,275	.....	9,050	5,750	.....	4,440	4,560
26	.....	9,725	5,650	6,975	6,500	9,100	27,700	8,500	5,360	4,520	4,600	.....
27	4,740	.....	5,950	6,550	6,790	9,100	24,800	8,275	.....	4,600	4,600	4,900
28	4,560	8,375	.....	6,340	6,750	.....	25,800	8,025	5,240	4,560	6,075	4,780
29	4,780	8,275	5,600	5,950	.....	11,025	25,500	7,225	.....	4,480	.....	4,740
30	4,900	.....	6,420	5,830	.....	11,250	20,980	.....	4,860	4,400	6,700	4,860
31	7,025	.....	7,650	5,790	.....	10,450	.....	8,275	.....	4,360	7,740	.....
1852–53.												
1	4,940	5,870	10,210	9,725	5,950	10,730	12,010	.....	10,390	4,700	4,820	5,280
2	4,940	7,860	9,000	.....	5,600	9,675	13,525	9,325	9,525	4,560	4,900	5,120
3	.....	7,900	8,175	8,720	5,790	9,675	.....	8,275	8,840	.....	4,780	4,940
4	4,900	11,860	7,700	8,225	6,340	9,275	12,440	7,700	8,325	.....	5,320	.....
5	4,780	11,300	.....	7,320	7,075	8,540	13,725	7,325	.....	4,600	5,550	5,060
6	4,740	8,540	8,225	7,550	.....	.....	17,220	7,375	7,700	4,640	5,240	5,200
7	4,860	.....	8,375	6,890	14,920	8,275	.....	8,900	7,325	4,600	.....	5,060
8	4,940	7,275	8,275	6,850	32,200	8,325	14,590	.....	6,975	4,560	5,450	5,020
9	4,740	7,700	8,500	.....	22,000	8,275	12,900	8,900	6,700	4,480	5,360	4,820
10	.....	7,375	9,825	6,890	15,610	8,840	.....	10,970	6,700	.....	5,320	4,640
11	4,900	6,890	8,900	6,890	12,700	9,325	13,260	10,850	6,460	4,560	5,140	.....
12	4,900	6,550	.....	6,975	10,850	9,150	12,225	10,100	.....	4,600	5,060	4,940
13	5,600	6,930	8,950	6,700	.....	.....	11,450	10,730	6,225	4,640	4,940	4,900
14	5,120	.....	8,275	6,500	7,450	9,000	11,125	9,375	5,950	4,640	.....	4,740
15	5,120	7,780	7,650	6,460	7,550	8,780	13,080	.....	5,690	4,600	5,690	4,860
16	5,240	.....	6,225	.....	7,600	7,860	12,800	7,860	5,600	4,560	5,750	3,340
17	.....	6,600	6,340	7,275	8,660	7,700	.....	7,820	5,500	.....	5,790	7,075
18	5,140	6,300	6,700	6,460	10,450	7,700	10,850	8,500	5,500	4,600	5,550	.....
19	5,140	5,910	.....	6,340	10,390	9,200	10,390	8,460	5,500	4,560	5,870	7,075
20	5,140	5,830	7,075	5,870	.....	.....	9,900	9,325	5,400	4,600	6,300	6,975
21	5,240	.....	7,175	5,870	8,420	9,725	9,725	10,625	5,140	4,640	.....	6,700
22	5,240	5,600	6,790	5,690	7,860	12,070	9,825	.....	5,100	4,640	6,930	7,820
23	5,140	5,650	6,700	.....	8,650	14,590	11,075	8,125	5,100	4,640	6,340	9,425
24	.....	5,500	6,340	6,125	17,995	15,400	.....	7,650	5,100	.....	5,600	8,025
25	5,060	.....	.....	6,700	19,645	13,925	12,010	7,860	4,820	4,780	5,120	.....
26	4,980	5,400	.....	7,125	18,065	12,225	10,500	10,390	.....	4,600	5,120	6,340
27	4,940	6,340	8,375	6,890	.....	.....	9,525	20,940	4,900	4,640	4,980	5,950
28	4,820	.....	8,660	6,340	11,740	10,625	8,900	25,900	4,900	4,640	.....	6,075
29	4,900	16,890	9,050	5,790	.....	10,210	8,840	.....	4,740	4,600	5,550	7,075
30	4,940	12,590	10,450	.....	.....	9,825	9,900	13,855	4,820	4,400	5,790	9,425
31	.....	.....	10,850	5,790	.....	10,390	.....	11,680	.....	.....	5,600	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1853–54.												
1	8,325	9,525	7,820	.....	5,910	8,275	7,175	34,300	7,740	5,240	4,700	4,600
2	.....	8,720	7,860	5,450	5,830	8,125	.....	38,800	7,075	.....	4,660	4,400
3	6,700	8,275	7,650	5,830	5,790	7,860	8,325	30,900	7,075	5,320	4,660	.....
4	6,340	7,880	.....	5,600	6,250	7,860	8,275	25,000	.....	.....	4,660	4,700
5	6,125	7,325	6,600	5,600	.....	.....	8,125	26,900	6,650	5,100	4,560	4,660
6	6,030	.....	6,175	5,790	5,790	7,700	.....	26,200	6,340	5,060	.....	4,600
7	5,870	6,750	6,340	5,950	5,990	7,550	12,440	.....	5,830	5,020	4,780	4,740
8	5,600	6,700	6,125	.....	5,790	7,325	17,925	17,400	6,125	4,900	4,660	4,740
9	.....	6,600	5,950	5,910	5,830	7,700	.....	15,100	7,325	.....	4,600	4,740
10	5,600	5,750	5,910	5,950	6,300	8,600	15,400	13,470	8,175	4,980	4,560	.....
11	5,600	12,960	.....	5,550	7,225	9,950	14,920	12,700	.....	4,900	4,560	5,790
12	5,550	10,675	6,030	5,400	.....	.....	14,920	13,410	8,420	4,820	4,520	5,950
13	5,550	.....	5,950	6,225	6,700	12,650	15,040	13,470	7,325	4,780	.....	5,240
14	5,500	14,150	5,950	9,325	6,340	13,725	15,040	.....	6,750	4,820	4,740	5,140
15	5,400	24,100	5,830	.....	6,340	13,470	14,100	12,380	6,600	4,700	4,660	5,100
16	.....	18,250	5,790	10,625	6,500	13,140	.....	17,010	6,500	.....	4,660	5,020
17	5,280	13,855	5,790	8,950	6,550	20,500	11,500	15,670	6,340	4,900	4,600	.....
18	5,280	12,010	.....	8,070	6,380	21,220	11,125	12,700	.....	4,660	4,560	4,980
19	5,240	12,010	5,990	7,550	.....	.....	10,575	13,675	5,950	4,560	4,560	4,900
20	5,100	.....	5,950	7,075	6,300	14,530	10,790	22,500	5,830	4,520	.....	5,020
21	5,060	11,500	5,870	6,810	5,830	12,070	12,175	.....	5,790	4,560	4,660	4,940
22	5,100	12,225	5,500	.....	5,950	10,390	13,410	13,855	5,600	4,520	4,560	4,900
23	.....	11,950	5,320	7,550	5,710	9,775	.....	12,560	5,450	.....	4,660	4,860
24	9,325	.....	6,125	7,700	6,125	9,675	14,350	11,250	5,360	4,980	4,660	.....
25	12,225	10,150	.....	7,500	5,790	9,100	14,800	10,210	.....	4,940	4,560	4,940
26	19,645	9,325	5,450	7,400	.....	.....	13,995	9,775	5,400	4,940	4,440	4,900
27	14,350	.....	5,360	6,700	6,420	8,175	14,200	10,675	5,280	4,900	.....	4,860
28	11,620	8,075	5,870	6,250	7,500	7,860	16,950	.....	5,280	4,940	4,600	4,780
29	13,140	7,700	5,320	.....	.....	6,930	26,400	9,525	5,240	4,900	4,600	4,860
30	.....	7,550	5,240	7,075	.....	9,575	.....	8,660	5,240	.....	4,600	4,860
31	11,125	.....	5,690	6,500	.....	9,575	.....	8,275	.....	4,900	4,480	.....
1854–55.												
1	.....	4,940	9,325	6,125	17,750	6,890	.....	12,900	5,650	.....	5,950	5,140
2	4,900	5,200	8,460	6,125	14,860	6,650	10,100	12,900	5,790	6,750	5,870	.....
3	4,860	5,710	.....	5,750	12,500	6,650	10,150	14,350	.....	6,250	5,870	5,060
4	4,820	5,320	7,500	5,650	.....	.....	10,050	13,410	7,975	.....	5,550	5,100
5	4,740	.....	6,810	5,710	10,730	6,600	.....	12,325	9,150	5,790	.....	5,140
6	4,740	5,240	6,460	5,790	9,225	7,325	10,450	.....	9,725	5,790	5,320	5,060
7	4,660	5,060	6,700	.....	8,325	8,600	16,485	10,910	7,780	6,500	5,320	5,020
8	.....	5,020	7,450	5,990	7,820	9,050	.....	10,500	7,075	.....	5,280	4,940
9	4,900	5,240	7,900	6,890	7,700	8,420	17,220	10,000	10,625	6,810	5,400	.....
10	4,860	4,900	.....	7,025	7,740	7,860	16,425	9,900	.....	7,325	5,710	5,400
11	4,820	4,860	6,850	6,930	.....	.....	16,485	9,525	8,560	6,700	6,420	5,020
12	4,740	.....	6,930	6,500	7,500	7,225	17,680	9,000	13,200	6,500	.....	4,980
13	4,740	14,030	7,075	6,340	7,125	6,975	17,400	.....	12,380	7,075	5,750	4,940
14	4,740	15,040	6,700	.....	6,750	6,850	15,850	7,820	9,575	6,750	5,400	4,980
15	.....	15,610	6,600	6,650	7,450	6,700	.....	8,075	8,275	.....	5,400	5,020
16	5,140	11,350	6,500	5,870	13,855	6,750	15,730	8,275	7,600	6,340	5,240	.....
17	5,140	9,275	.....	5,910	15,790	6,930	17,010	8,500	.....	5,910	5,320	5,020
18	5,400	8,275	6,650	5,790	.....	.....	20,740	10,150	6,850	5,600	5,140	4,980
19	5,320	.....	6,975	6,250	14,150	7,025	24,800	9,000	6,300	5,500	.....	5,060
20	5,200	6,930	6,750	6,420	12,440	7,075	27,700	.....	6,125	5,100	5,140	5,060
21	5,100	6,750	6,500	.....	11,025	7,075	33,600	7,650	6,125	5,280	5,140	5,020
22	.....	6,500	6,340	7,600	10,150	7,025	.....	7,500	6,250	.....	5,060	4,940
23	5,200	6,460	6,340	11,125	9,525	6,975	26,400	7,075	6,300	5,400	5,020	.....
24	4,980	6,340	.....	15,280	9,675	6,850	22,900	6,250	.....	5,240	4,980	5,060
25	4,940	6,700	.....	17,400	.....	.....	20,185	6,420	7,075	4,980	6,125	4,980
26	4,900	.....	5,830	14,860	8,660	6,810	19,715	6,550	7,600	5,060	.....	5,020
27	4,860	19,645	5,830	12,500	7,450	6,700	19,470	.....	9,050	5,550	5,750	4,980
28	4,820	13,200	5,950	.....	7,025	6,600	19,100	6,250	9,325	5,830	5,450	5,060
29	.....	10,450	6,300	11,740	.....	6,700	.....	6,030	8,375	.....	5,280	5,020
30	4,940	.....	6,460	14,470	.....	6,600	13,410	5,910	7,650	6,340	5,240	.....
31	5,020	.....	.....	17,400	.....	7,275	.....	5,750	.....	5,950	5,200	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1855–56.												
1	5,200	7,700	6,340	6,890	6,250	4,900	5,600	9,525	.....	5,400	4,520	9,325
2	5,060	7,450	.....	6,600	6,030	.....	5,710	8,950	7,740	5,240	4,480	8,075
3	5,550	7,125	6,600	6,420	.....	5,060	6,030	9,100	7,275	5,240	.....	7,225
4	22,900	.....	6,380	6,460	6,930	4,980	7,175	.....	7,075	.....	4,560	6,700
5	19,470	8,600	6,250	6,600	6,750	5,060	9,100	9,825	7,175	5,200	4,560	6,460
6	21,300	8,900	6,125	.....	6,700	5,600	.....	9,100	7,175	.....	4,860	6,250
7	.....	8,225	6,125	7,075	6,340	5,140	14,100	8,375	7,275	5,360	11,740	.....
8	16,625	7,740	5,950	6,500	6,340	5,060	16,765	7,900	.....	5,280	17,995	5,910
9	13,260	7,600	.....	6,890	6,125	.....	18,250	7,860	7,600	5,200	14,470	5,990
10	10,500	7,275	6,600	7,500	.....	6,300	.....	10,100	7,450	5,060	.....	6,075
11	.....	.....	9,000	7,400	6,340	6,340	21,965	.....	7,275	4,980	12,440	6,030
12	.....	6,850	8,900	7,500	6,030	5,750	19,160	14,800	7,075	4,940	10,390	5,910
13	7,550	7,400	6,700	.....	6,890	5,600	.....	13,625	6,600	.....	8,600	5,870
14	.....	10,390	6,600	7,275	6,700	.....	14,350	11,740	6,420	5,240	7,650	.....
15	8,175	10,730	6,125	6,890	6,460	5,320	13,080	10,450	.....	5,200	6,850	5,950
16	9,325	9,425	.....	6,890	6,075	.....	11,500	9,425	6,075	5,200	6,500	5,870
17	10,150	8,375	6,975	6,420	.....	5,400	10,450	9,100	5,950	5,060	.....	5,790
18	9,000	.....	7,975	6,340	6,600	5,320	10,500	.....	5,790	4,820	5,950	5,650
19	7,700	7,820	8,075	6,250	6,340	5,240	10,730	8,900	5,790	4,900	5,790	5,710
20	6,850	7,700	7,780	.....	6,125	5,320	.....	8,660	5,830	.....	5,870	5,650
21	.....	7,225	6,850	6,650	5,990	5,240	12,700	9,050	5,790	4,900	6,340	.....
22	6,700	7,175	6,700	6,500	5,950	5,240	16,375	9,275	.....	4,860	17,160	5,990
23	6,975	6,600	.....	6,420	5,950	.....	19,100	8,225	5,550	4,700	17,280	6,250
24	7,075	6,890	11,620	6,340	.....	5,500	18,490	7,650	5,500	4,660	.....	6,750
25	8,075	.....	.....	6,340	5,990	5,500	15,340	.....	5,400	4,480	10,625	7,500
26	10,450	6,500	8,780	6,890	6,030	5,600	13,410	7,780	5,400	4,400	9,525	7,275
27	9,950	7,075	8,125	.....	5,950	5,910	.....	7,700	5,360	.....	8,375	6,850
28	.....	7,400	7,820	6,250	5,910	5,950	10,850	7,400	5,280	4,560	7,650	.....
29	8,325	.....	8,075	6,175	5,060	5,950	10,100	8,025	.....	4,560	7,075	6,300
30	8,175	6,700	.....	6,075	.....	.....	10,150	8,660	5,320	4,520	8,225	6,030
31	7,860	.....	7,225	6,340	.....	5,600	.....	8,900	.....	4,480	.....	.....
1856–57.												
1	6,125	6,125	5,990	5,910	.....	.....	9,275	11,740	10,270	5,750	6,460	9,100
2	8,600	.....	5,870	5,950	6,890	8,660	9,675	10,970	9,775	5,710	.....	8,025
3	11,450	5,950	5,950	5,870	6,850	7,600	9,225	.....	9,625	5,600	6,175	7,125
4	8,780	6,075	5,950	.....	6,810	7,600	8,460	19,340	9,625	.....	5,830	6,460
5	.....	6,075	6,340	6,340	6,700	7,700	.....	19,470	8,840	.....	5,830	5,990
6	6,975	5,950	5,950	6,975	6,750	7,820	8,025	24,800	8,325	5,600	5,710	.....
7	6,850	5,950	.....	7,860	6,700	7,780	11,400	30,100	.....	5,450	5,600	5,600
8	6,500	5,910	5,990	8,325	.....	.....	26,900	22,000	7,650	5,400	5,600	5,400
9	6,340	.....	5,830	8,780	11,300	6,810	20,110	16,695	7,075	5,400	.....	5,140
10	6,175	5,990	5,790	8,460	14,350	6,750	14,300	.....	7,125	5,400	5,450	4,900
11	5,990	5,950	5,710	.....	18,065	6,420	12,900	13,525	6,850	5,360	5,400	4,900
12	.....	5,950	5,950	8,075	15,100	6,460	.....	12,900	6,975	.....	5,450	4,900
13	5,950	5,790	6,550	7,600	11,860	6,175	13,855	11,560	.....	5,240	6,500	.....
14	5,950	5,790	.....	7,450	10,050	6,175	13,410	10,500	.....	5,200	6,175	4,820
15	5,910	5,710	7,780	7,275	.....	.....	19,160	9,900	8,125	5,240	8,560	4,780
16	5,870	.....	8,275	7,450	9,325	6,300	.....	9,900	7,400	5,400	.....	4,740
17	5,790	5,870	8,275	7,780	11,680	6,500	26,100	.....	6,890	5,500	7,450	4,560
18	5,870	5,790	7,075	.....	16,485	6,975	18,370	11,620	6,700	5,280	6,650	4,740
19	.....	5,710	5,950	8,175	22,100	8,075	.....	12,325	6,750	.....	8,075	5,060
20	6,500	5,710	.....	8,780	22,700	13,020	13,995	11,350	7,820	5,280	8,175	.....
21	6,460	5,600	.....	7,780	20,325	14,860	15,610	13,080	.....	5,240	7,450	4,900
22	6,175	5,500	7,780	7,450	.....	.....	17,680	17,010	8,075	5,870	11,450	4,820
23	6,340	.....	8,175	7,975	13,525	11,400	16,625	17,280	7,975	6,460	.....	4,980
24	6,340	6,125	7,860	8,275	12,175	10,210	15,160	.....	9,950	7,820	8,375	5,140
25	6,030	6,300	.....	.....	11,740	9,675	14,470	13,020	10,000	8,600	9,000	5,360
26	.....	6,300	7,325	7,780	13,140	9,675	.....	11,800	8,275	.....	8,500	5,950
27	6,125	.....	7,125	7,860	12,225	9,900	12,750	11,025	7,275	7,820	7,325	.....
28	5,910	.....	.....	7,025	11,680	10,050	13,260	13,090	.....	6,975	6,930	5,500
29	5,950	.....	6,700	6,810	.....	.....	13,260	10,500	6,420	6,650	6,850	5,140
30	6,300	.....	6,250	6,700	.....	9,375	12,800	12,650	5,790	6,850	.....	5,140
1	6,300	.....	6,030	6,810	.....	9,275	.....	.....	.....	6,930	10,910	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1857–58.												
1	5,060	.....	6,850	6,250	7,860	5,400	8,660	8,460	7,500	5,600	.....	5,600
2	4,780	10,000	8,840	6,550	7,175	5,710	8,660	.....	7,075	5,400	5,500	5,400
3	4,600	9,225	10,390	.....	.....	5,790	8,460	8,325	6,340	5,320	5,400	5,320
4	.....	8,500	9,225	6,460	8,075	5,500	.....	8,175	6,700	.....	5,400	5,200
5	5,400	7,975	8,175	6,500	7,175	5,650	8,600	7,860	6,125	.....	5,400	.....
6	5,240	7,740	.....	.....	7,175	5,320	8,500	7,700	.....	5,400	5,830	5,600
7	4,900	8,780	6,975	6,125	.....	.....	8,560	8,460	6,125	5,320	5,910	5,360
8	4,820	.....	7,650	6,420	8,460	5,060	8,125	11,860	6,125	5,220	.....	5,400
9	4,740	9,375	8,075	.....	6,340	5,060	7,700	.....	6,700	5,200	5,790	5,400
10	4,060	9,900	9,225	.....	6,125	5,060	7,600	9,475	6,125	5,140	5,500	5,240
11	.....	9,775	11,740	6,125	6,030	4,900	.....	8,720	6,250	.....	5,400	5,240
12	4,860	9,775	10,150	7,780	6,030	4,900	7,820	8,840	6,500	5,400	5,400	.....
13	4,560	8,900	.....	11,740	5,600	4,900	7,700	9,725	.....	5,400	5,400	.....
14	4,560	8,275	7,975	13,470	.....	.....	8,460	10,450	10,500	5,500	5,790	5,400
15	4,600	.....	8,175	11,860	5,600	5,060	.....	9,150	10,625	6,125	.....	.....
16	4,660	7,550	7,860	10,390	5,950	5,400	10,050	.....	9,475	6,420	5,500	5,400
17	4,280	7,400	7,650	.....	6,250	6,600	9,275	8,025	8,660	5,710	5,400	9,100
18	.....	7,500	7,500	11,400	6,030	9,150	.....	8,225	8,075	.....	5,360	24,300
19	6,380	7,650	8,460	10,675	5,870	14,710	11,300	8,420	7,500	5,360	5,400	.....
20	5,910	7,450	.....	9,725	5,140	15,100	7,500	8,660	.....	5,240	5,240	10,850
21	5,870	7,175	8,175	8,275	.....	.....	7,700	8,660	6,700	5,240	5,600	8,600
22	6,700	.....	7,650	8,075	5,200	12,440	8,560	9,675	6,600	5,240	.....	7,275
23	5,830	6,930	7,700	7,500	5,600	11,560	8,900	.....	6,500	5,320	5,400	6,700
24	5,200	7,275	7,780	.....	5,500	10,390	9,100	10,150	6,420	5,500	5,240	6,420
25	.....	7,860	.....	7,500	5,060	9,275	.....	10,390	6,125	.....	5,240	6,250
26	6,700	.....	6,340	6,890	5,140	8,460	10,150	11,740	5,950	5,950	5,240	.....
27	15,920	6,340	.....	8,500	4,980	8,075	9,100	9,950	.....	5,790	5,140	5,870
28	24,900	6,600	6,420	10,390	.....	.....	8,660	9,100	6,340	5,550	5,100	5,600
29	21,545	.....	5,790	10,150	.....	7,500	8,460	8,460	5,950	5,400	.....	5,600
30	16,130	6,420	.....	9,225	.....	7,700	8,420	.....	5,710	5,400	5,950	5,400
31	13,140	.....	6,075	.....	.....	8,275	.....	7,700	.....	.....	6,340	.....
1858–59.												
1	5,400	10,625	5,950	5,550	7,075	6,750	23,650	.....	6,890	6,700	5,060	4,980
2	5,600	9,625	5,400	.....	6,700	6,975	18,940	13,625	6,890	6,460	4,980	5,060
3	.....	8,275	5,400	5,950	6,500	6,550	.....	12,750	6,810	.....	5,060	4,980
4	8,275	7,500	5,600	5,790	6,340	6,340	15,990	12,700	6,930	.....	4,980	.....
5	7,075	7,075	.....	6,125	6,340	6,300	15,340	11,740	.....	8,125	.....	5,020
6	6,700	7,500	5,790	5,790	.....	.....	14,150	11,500	7,700	7,275	5,060	4,900
7	6,125	.....	5,600	5,600	5,950	6,500	.....	12,225	7,075	6,700	.....	4,900
8	5,870	9,000	5,870	5,870	5,950	7,075	12,125	.....	6,600	6,250	.....	4,900
9	5,790	9,725	6,125	.....	5,870	7,700	11,740	12,850	6,420	5,950	4,980	4,900
10	.....	9,050	6,125	7,075	6,300	8,075	.....	12,560	6,500	.....	4,980	4,820
11	5,870	8,375	5,500	8,175	7,500	7,860	10,625	13,925	6,810	5,790	4,900	.....
12	5,600	7,700	.....	8,660	7,500	7,900	10,850	12,960	.....	5,500	4,900	4,940
13	5,500	7,050	5,600	8,460	.....	.....	11,300	11,300	6,700	5,400	4,900	4,900
14	5,790	.....	5,600	.....	7,275	11,950	11,740	10,150	6,380	5,600	.....	4,900
15	5,790	6,380	5,500	6,890	6,600	14,590	12,800	.....	6,300	5,790	5,060	4,900
16	.....	6,125	6,500	.....	6,420	21,220	13,625	9,525	6,125	5,600	4,980	4,900
17	.....	5,870	7,175	6,340	6,340	30,600	.....	8,660	5,950	.....	4,940	4,900
18	6,500	6,340	7,975	6,125	6,420	28,900	13,625	8,175	6,975	5,400	4,900	.....
19	6,125	6,125	.....	5,950	6,500	32,900	13,140	8,075	.....	5,240	4,900	5,060
20	5,950	5,790	5,950	6,125	.....	.....	12,560	9,225	9,325	5,240	4,900	4,940
21	5,950	.....	5,950	5,950	7,175	42,400	12,275	10,730	9,100	5,200	.....	4,980
22	5,790	5,910	5,950	7,780	8,025	31,100	12,175	.....	11,075	5,140	4,900	5,060
23	5,600	5,790	6,250	.....	7,900	24,500	12,325	11,740	11,250	5,060	4,900	5,950
24	.....	5,790	5,790	10,625	7,900	21,140	.....	11,680	10,050	.....	4,860	7,500
25	7,700	.....	.....	10,000	7,700	19,790	14,350	10,150	8,950	.....	4,900	.....
26	8,900	5,950	.....	8,950	7,700	22,900	13,785	9,000	.....	5,100	5,140	6,340
27	7,700	5,790	5,710	8,275	.....	.....	15,610	8,460	8,840	.....	5,710	5,750
28	6,810	.....	5,870	7,860	6,890	18,250	18,250	7,975	8,075	5,280	.....	5,400
29	6,500	5,790	6,340	7,500	.....	17,040	16,625	.....	7,275	.....	5,400	5,320
30	6,125	5,600	6,125	.....	.....	18,610	14,710	7,400	6,890	5,140	5,240	5,240
31	.....	.....	6,175	7,500	.....	25,800	.....	6,810	.....	.....	5,060	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1859–60.												
1	5,140	5,060	5,950	.....	5,910	9,300	.....	5,550	5,160	.....	6,030	5,080
2	.....	5,060	6,075	8,275	6,440	10,730	7,675	5,400	6,300	5,200	5,750	.....
3	.....	5,060	6,975	8,420	6,275	14,620	8,600	5,525	.....	5,020	5,400	5,140
4	5,060	5,060	.....	8,125	6,010	.....	8,125	5,500	6,600	.....	5,280	5,040
5	4,980	4,980	6,500	7,975	.....	16,325	.....	5,690	5,950	5,100	.....	5,000
6	.....	.....	6,420	8,025	5,550	13,750	7,780	.....	5,990	5,060	5,080	5,000
7	4,980	5,060	7,025	7,475	5,650	11,770	8,420	5,690	6,830	5,140	5,040	4,960
8	5,020	5,060	8,275	.....	5,910	10,575	.....	5,690	6,770	.....	4,960	5,160
9	.....	5,060	8,560	6,625	6,250	10,075	7,860	5,690	6,175	5,400	4,960	.....
10	.....	4,660	8,500	6,400	6,075	9,450	8,420	5,600	.....	5,450	5,080	5,425
11	5,450	4,560	.....	6,440	6,810	.....	8,660	5,525	5,600	5,650	5,080	5,770
12	.....	4,740	7,400	6,525	.....	7,900	8,420	5,425	5,240	5,690	.....	5,525
13	.....	.....	7,860	6,975	6,030	8,460	7,900	.....	5,400	5,400	5,080	9,525
14	5,280	5,240	.....	6,810	5,525	8,325	7,650	5,360	5,280	5,280	5,120	9,250
15	5,140	6,175	6,300	.....	5,750	8,025	.....	5,320	5,200	.....	5,450	7,550
16	.....	6,300	6,340	6,250	5,670	8,075	6,910	5,360	5,060	5,240	7,150	.....
17	.....	5,790	6,250	5,990	5,500	8,420	6,675	5,320	.....	5,100	7,050	7,150
18	5,100	5,500	.....	6,175	5,550	.....	6,340	5,040	5,690	5,060	5,910	6,650
19	.....	5,400	6,125	5,870	.....	9,025	6,460	5,040	5,600	5,060	.....	6,300
20	.....	.....	6,075	5,750	5,910	9,650	6,340	.....	5,790	5,060	5,260	6,050
21	5,500	9,275	6,125	5,670	5,425	10,450	6,300	6,320	5,950	5,020	5,220	6,500
22	5,320	7,700	6,030	.....	5,220	10,300	.....	6,400	6,575	.....	5,625	8,900
23	.....	7,125	6,075	5,750	5,790	9,250	6,340	5,970	6,400	5,140	6,500	.....
24	5,140	.....	6,420	5,750	7,860	8,500	6,420	5,600	.....	5,100	6,460	8,440
25	5,140	6,700	.....	5,750	10,760	.....	6,340	5,400	5,500	5,060	5,950	7,275
26	5,060	6,380	6,700	6,075	.....	7,800	6,340	5,320	5,400	5,000	.....	7,650
27	5,100	.....	6,340	6,440	10,270	7,575	5,990	.....	5,160	5,040	5,600	8,050
28	5,060	6,500	7,075	5,950	9,625	7,475	5,790	5,220	5,080	5,000	5,600	7,700
29	5,060	6,420	8,375	.....	9,450	7,325	.....	5,080	5,080	.....	5,600	7,125
30	.....	6,125	8,175	5,750	.....	7,250	5,690	5,040	5,080	5,140	5,320	.....
31	.....	.....	7,975	5,600	.....	7,100	.....	5,080	.....	5,790	5,200	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.
1860–61.								
1	6,225	6,030	10,525	6,810	6,675	9,250	19,575	14,530
2	6,300	6,125	.....	6,340	6,400	11,450	16,555	13,525
3	6,050	6,275	10,075	6,625	.....	.....	14,030	12,325
4	6,150	.....	9,125	.....	7,125	17,400	.....	10,730
5	6,340	8,025	8,580	.....	7,225	22,900	12,410	.....
6	7,125	9,250	8,175	.....	7,125	22,600	12,875	9,400
7	.....	8,520	7,625	6,420	6,930	18,250	.....	10,760
8	6,750	8,250	7,025	6,300	8,075	14,225	14,065	19,950
9	6,550	8,025	.....	6,830	7,975	12,350	14,150	20,220
10	6,700	7,350	6,650	6,460	.....	.....	13,625	15,790
11	6,725	.....	6,340	6,870	6,700	24,000	13,855	13,625
12	6,300	13,750	6,700	6,830	7,150	22,500	14,300	.....
13	6,050	14,150	6,810	.....	8,900	17,855	14,800	11,225
14	.....	11,740	7,075	8,075	12,040	14,250	.....	11,225
15	6,075	10,100	7,500	7,000	16,130	12,675	28,900	13,675
16	6,275	9,150	.....	6,700	15,160	11,650	30,100	14,590
17	6,360	8,275	6,460	6,930	.....	.....	23,900	12,650
18	6,320	.....	6,225	6,675	13,600	10,210	24,900	11,350
19	6,300	7,740	6,575	6,790	12,850	9,425	23,500	.....
20	6,010	7,700	6,380	.....	11,980	9,050	19,505	9,525
21	.....	7,860	6,870	6,950	11,075	9,000	.....	9,025
22	6,320	7,500	7,740	6,790	10,600	8,150	14,650	8,690
23	6,225	7,150	.....	7,275	9,625	8,000	13,785	8,660
24	6,480	7,250	8,840	7,025	.....	.....	13,525	7,975
25	6,500	.....	.....	6,675	9,275	9,025	14,710	7,820
26	6,460	15,460	7,450	6,500	8,350	8,900	14,860	.....
27	6,175	11,300	7,075	.....	8,420	9,350	13,855	8,500
28	.....	11,650	6,870	6,830	8,420	13,925	.....	10,075
29	6,440	.....	6,830	7,075	.....	18,280	12,410	12,175
30	6,225	10,730	.....	6,525	.....	18,520	13,750	10,700
31	5,970	.....	6,725	6,930	.....	.....	.....	9,150

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1866.							
1	11,125	.....	7,200	8,500	.....	5,910	4,920
2	9,100	11,325	7,025	7,780	5,525	6,075	.....
3	8,400	10,760	6,950	.....	5,360	5,550	.....
4	.....	10,760	6,460	6,910	.....	5,425	4,780
5	7,325	.....	6,250	5,120	5,140	.....	4,920
6	6,975	9,275	.....	6,550	5,060	5,360	4,540
7	6,700	10,050	5,930	6,340	4,800	5,100	4,860
8	6,400	.....	5,750	6,460	.....	5,040	4,840
9	5,970	10,525	5,810	6,700	5,200	4,880	.....
10	6,010	9,275	5,850	.....	4,900	5,180	4,880
11	.....	8,580	6,125	8,150	5,000	5,000	5,040
12	5,890	8,440	6,200	7,300	4,800	.....	5,000
13	5,830	8,050	.....	6,910	4,700	5,240	4,900
14	6,050	8,560	6,010	6,575	4,840	5,080	6,625
15	6,420	.....	6,030	6,460	.....	4,960	5,650
16	6,850	9,200	6,010	6,550	4,920	4,960	.....
17	10,525	9,225	5,850	.....	4,960	5,380	5,220
18	.....	8,480	5,850	6,460	4,500	6,175	5,000
19	10,700	8,420	6,125	6,950	4,900	.....	5,360
20	8,750	8,325	.....	12,225	4,840	5,240	5,100
21	7,860	9,775	5,910	9,775	4,360	5,260	5,830
22	7,475	.....	5,850	7,950	.....	5,400	6,810
23	6,870	11,375	5,870	7,050	5,040	5,100	.....
24	6,870	10,760	6,400	.....	5,060	5,240	7,780
25	.....	13,785	5,910	6,175	5,000	5,280	6,700
26	6,600	14,225	5,710	6,525	5,100	.....	6,050
27	5,690	11,325	.....	5,525	5,100	5,400	6,250
28	6,360	9,275	6,830	5,750	5,100	5,300	7,675
29	6,675	.....	10,600	5,360	.....	5,000	8,400
30	10,760	7,700	11,375	5,750	6,500	5,000	.....
31	11,375	.....	10,125	.....	6,050	4,820	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1866–67.												
1	6,750	16,860	8,440	6,600	6,250	6,575	7,925	9,850	9,250	5,500	5,000	.....
2	6,250	11,125	.....	6,300	6,100	6,625	10,300	11,830	.....	5,060	5,080	6,890
3	5,990	8,560	9,350	6,525	.....	.....	11,740	16,800	8,150	5,080	7,700	6,500
4	5,810	.....	8,100	6,420	6,125	6,890	.....	14,175	8,720	.....	.....	6,175
5	5,650	6,850	7,650	5,950	6,030	6,790	13,700	.....	13,110	5,020	8,840	6,175
6	5,220	6,500	8,200	.....	6,300	6,600	14,440	9,975	10,700	5,000	7,700	5,710
7	.....	6,225	8,500	6,010	5,950	6,525	.....	9,375	8,780	.....	6,650	5,790
8	5,300	5,970	7,860	6,910	5,950	6,460	13,890	8,950	8,025	5,360	6,340	.....
9	5,160	5,950	.....	6,830	6,050	6,360	13,625	10,390	.....	5,340	6,050	5,650
10	5,320	5,810	9,350	6,275	.....	.....	13,925	17,160	7,125	5,200	5,670	5,650
11	5,160	.....	9,050	5,970	11,800	6,125	14,650	15,955	7,275	5,100	.....	5,475
12	5,080	5,600	7,780	6,150	15,100	6,500	18,640	.....	6,910	5,000	5,600	5,550
13	5,040	5,650	6,830	.....	14,920	6,625	18,250	11,450	6,550	4,920	5,400	5,400
14	.....	5,930	6,250	6,340	.....	6,700	.....	10,700	6,460	.....	5,040	5,340
15	5,180	5,850	6,050	6,250	15,400	6,360	13,700	11,275	6,100	5,020	5,610	.....
16	5,160	5,850	.....	6,175	16,400	6,300	12,800	12,125	.....	4,840	7,075	5,380
17	5,140	12,850	5,575	5,710	.....	.....	15,920	11,860	6,275	.....	16,025	5,400
18	5,180	.....	5,710	6,075	13,410	5,750	27,000	10,910	7,350	4,720	.....	5,180
19	5,140	12,410	5,525	9,100	11,680	6,250	24,700	.....	8,000	4,720	19,575	5,000
20	5,100	9,900	5,750	.....	10,850	5,970	17,960	9,300	8,480	4,820	14,860	5,120
21	.....	9,150	6,400	7,150	9,650	5,950	.....	9,225	8,420	.....	11,560	5,120
22	5,140	10,150	6,010	6,950	8,720	6,075	13,600	8,600	7,550	5,950	9,575	.....
23	5,100	8,950	.....	6,460	8,440	6,100	14,590	8,630	.....	5,890	8,720	5,690
24	5,060	7,900	5,890	6,360	.....	.....	18,370	9,350	6,300	5,670	9,000	5,220
25	5,020	.....	.....	7,000	7,760	6,100	15,550	9,350	5,990	5,340	.....	5,120
26	5,000	7,150	8,720	6,100	7,500	7,450	13,170	.....	5,930	5,220	9,025	5,020
27	4,820	6,650	8,560	.....	7,450	7,820	11,740	8,750	5,750	5,340	8,000	4,800
28	.....	6,500	8,480	6,340	7,075	7,800	.....	14,710	5,930	.....	7,425	4,800
29	5,060	.....	8,540	6,500	.....	7,500	10,450	12,150	5,770	5,260	6,850	.....
30	5,040	6,460	.....	6,460	.....	7,075	9,950	10,150	.....	5,380	7,350	4,920
31	9,150	.....	6,910	6,340	.....	.....	.....	10,025	.....	5,080	7,800	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1867–68.												
1	4,900	8,400	.....	6,175	5,890	.....	9,050	8,440	14,065	5,670	4,740	5,000
2	4,900	7,600	6,775	5,990	.....	5,770	.....	8,440	12,560	5,550	.....	4,760
3	4,980	.....	5,950	5,710	5,770	5,670	10,700	.....	11,300	5,500	4,900	4,860
4	4,960	6,460	5,930	5,650	6,550	6,075	10,700	8,325	9,900	.....	4,860	4,940
5	4,880	6,050	5,990	.....	5,910	5,670	.....	8,025	9,450	.....	4,900	4,860
6	.....	5,930	.....	6,380	5,810	5,910	9,100	7,860	8,630	5,140	5,000	.....
7	5,990	6,050	5,650	6,200	5,790	5,060	8,225	7,900	.....	5,020	4,960	8,350
8	6,525	5,910	.....	5,425	6,300	.....	8,050	8,400	12,470	4,900	4,860	7,025
9	5,910	5,710	6,275	5,475	.....	5,830	7,950	9,275	13,550	4,840	.....	6,950
10	5,525	.....	5,750	6,575	5,650	6,360	8,250	.....	11,250	4,960	5,220	6,500
11	5,360	6,100	5,770	6,700	6,225	7,575	8,225	8,500	9,900	4,900	5,080	6,810
12	5,340	6,870	5,650	.....	5,810	7,900	.....	8,075	9,400	.....	5,400	9,025
13	.....	6,575	6,125	7,050	5,600	8,950	7,950	7,840	9,950	5,320	5,525	.....
14	5,525	6,460	5,850	6,950	5,910	10,850	7,975	9,150	.....	4,920	5,240	12,350
15	5,380	6,030	.....	5,850	5,400	.....	8,100	14,920	9,600	4,840	5,220	10,880
16	5,450	5,970	.....	5,950	.....	16,275	10,180	16,485	8,560	4,780	.....	9,625
17	5,180	.....	5,320	5,910	5,910	14,950	15,400	.....	8,200	4,700	5,120	7,900
18	5,220	5,650	5,690	6,030	5,300	17,340	18,030	12,825	8,000	4,920	5,060	7,175
19	5,240	5,300	5,890	.....	5,730	20,150	.....	14,275	7,400	.....	4,760	6,550
20	.....	5,360	6,100	5,710	5,525	20,900	13,750	16,225	7,075	5,040	4,760	.....
21	5,180	5,200	5,575	5,525	5,600	17,250	12,470	16,450	.....	5,120	5,100	6,300
22	5,040	5,260	.....	5,525	5,575	.....	13,750	21,930	7,325	5,000	4,920	6,890
23	4,960	5,320	5,650	5,930	.....	11,375	13,020	24,500	8,600	4,980	.....	7,000
24	5,100	.....	5,600	5,280	6,010	10,050	11,800	.....	8,840	4,940	5,140	7,400
25	5,220	5,380	.....	5,850	5,525	9,600	11,175	30,000	8,200	5,000	4,900	8,750
26	5,200	5,770	5,670	.....	5,750	9,075	.....	28,300	7,450	.....	4,900	13,050
27	.....	5,990	5,670	5,850	5,280	8,950	9,100	22,200	7,050	5,320	4,940	.....
28	5,260	.....	6,460	5,830	5,550	8,540	8,975	18,100	.....	5,180	5,020	17,925
29	4,940	6,380	.....	5,575	5,600	.....	8,540	15,250	6,480	4,940	4,920	15,730
30	5,340	6,380	7,600	5,730	.....	9,150	8,440	14,100	6,300	5,040	.....	12,650
31	7,400	.....	7,475	5,850	.....	9,025	.....	.....	.....	5,040	5,040	.....
1868–69.												
1	.....	.....	8,900	5,550	6,360	6,725	24,300	13,350	7,860	7,450	.....	4,880
2	9,150	7,325	8,025	5,990	6,500	6,300	22,950	.....	7,740	6,910	5,020	4,600
3	8,420	14,500	6,300	.....	5,650	5,890	21,790	13,700	8,275	6,400	4,920	4,800
4	.....	12,500	6,850	5,830	5,750	5,930	.....	14,300	7,800	.....	4,940	4,520
5	7,760	10,450	6,830	5,475	6,175	6,500	22,700	15,130	7,200	.....	4,980	.....
6	7,125	9,400	.....	5,950	6,175	6,050	19,990	13,440	.....	5,770	4,860	4,820
7	6,890	9,025	6,850	5,950	.....	.....	18,160	12,850	6,870	5,770	4,840	4,720
8	6,890	.....	7,275	6,575	6,010	6,075	.....	11,950	6,870	5,500	.....	4,780
9	6,850	7,900	7,450	6,650	5,600	5,810	18,980	.....	6,750	5,360	4,900	4,780
10	6,275	8,400	7,100	.....	5,400	5,525	18,370	11,250	6,460	5,340	4,820	4,840
11	.....	9,650	7,350	7,550	5,600	6,850	.....	10,940	6,050	.....	4,700	5,360
12	6,200	12,825	7,325	7,675	5,425	7,860	16,625	11,000	5,890	6,200	4,620	.....
13	5,870	12,650	.....	7,700	5,450	9,150	16,200	10,790	.....	5,710	4,540	5,300
14	5,950	10,880	7,000	7,275	.....	.....	15,430	12,175	5,690	5,710	4,800	4,940
15	5,950	.....	6,400	7,175	5,810	9,325	15,160	11,560	5,750	5,400	.....	4,960
16	5,950	8,660	6,175	6,700	6,850	9,025	15,100	.....	5,770	5,550	5,060	4,800
17	5,790	8,150	6,030	.....	7,475	8,420	16,450	12,100	6,100	5,400	5,080	4,800
18	.....	7,650	6,125	6,650	7,450	7,650	.....	13,170	5,910	.....	5,000	4,460
19	5,790	7,800	6,975	6,320	7,125	7,325	22,700	13,020	5,670	5,525	4,960	.....
20	6,050	7,820	.....	6,300	6,750	7,125	25,400	11,830	.....	5,400	4,920	4,940
21	5,830	7,900	5,670	6,300	.....	.....	27,400	12,125	5,710	5,340	4,860	4,940
22	6,050	.....	5,950	6,225	6,360	7,150	31,000	11,590	5,970	5,280	.....	4,880
23	6,050	7,500	5,790	6,460	6,400	6,500	33,600	.....	6,890	5,160	4,960	4,460
24	6,150	7,375	6,440	.....	6,810	6,380	25,150	9,275	6,675	5,260	4,860	4,720
25	.....	7,125	.....	5,690	6,525	6,440	.....	8,900	6,500	.....	4,740	4,480
26	5,850	.....	6,650	6,125	6,360	6,340	20,780	8,480	6,460	5,140	4,940	.....
27	5,930	9,775	.....	6,175	5,890	7,075	19,100	8,520	.....	5,100	4,760	5,220
28	5,750	12,275	5,830	5,340	.....	.....	17,100	8,600	6,440	4,960	4,740	5,000
29	5,810	.....	5,790	5,500	.....	13,320	15,400	8,460	6,625	4,760	.....	7,250
30	5,690	9,650	5,670	5,340	.....	17,130	15,310	.....	7,175	5,320	4,640	5,890
31	5,770	.....	5,575	.....	.....	22,950	.....	7,900	.....	5,060	4,680	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1869–70.												
1	5,525	7,650	7,125	13,785	9,125	9,425	19,990	.....	6,225	5,200	4,860	4,820
2	5,200	7,275	9,400	.....	8,780	9,100	20,700	13,200	6,125	5,240	4,860	4,580
3	.....	7,075	10,575	24,600	8,225	8,950	.....	12,300	5,990	.....	4,860	4,740
4	5,300	7,075	8,400	34,400	7,800	8,810	19,645	11,650	5,890	.....	4,560	.....
5	32,600	6,910	.....	26,300	8,520	7,900	17,820	11,125	.....	5,000	4,800	4,580
6	45,900	6,910	6,850	18,400	.....	.....	18,250	11,050	5,600	5,000	4,680	4,940
7	25,350	.....	5,600	15,400	8,125	7,950	.....	10,550	5,750	4,880	.....	4,960
8	15,250	6,870	6,810	12,225	7,840	7,675	20,940	.....	5,730	5,020	4,840	4,720
9	11,400	6,625	6,675	.....	6,750	7,575	21,650	9,200	5,850	4,960	4,580	4,400
10	.....	6,500	6,950	9,775	7,100	7,700	.....	9,575	6,250	.....	4,620	4,600
11	9,525	6,360	7,820	9,450	7,840	7,550	24,600	10,240	6,250	5,360	4,700	.....
12	18,400	6,300	.....	9,925	7,325	7,175	25,000	10,650	.....	5,000	4,620	4,780
13	19,415	6,030	6,750	9,800	.....	.....	30,300	11,590	5,890	5,000	4,740	4,740
14	17,100	.....	6,600	9,325	7,575	6,400	32,350	11,710	5,850	7,050	.....	4,420
15	20,255	5,850	6,850	9,750	7,350	6,850	28,000	.....	5,850	4,960	4,620	4,600
16	16,696	5,575	6,340	.....	7,860	7,475	26,200	9,850	5,730	4,920	4,700	3,940
17	.....	5,550	6,320	9,950	8,870	6,850	.....	9,350	5,575	.....	4,600	4,700
18	14,100	.....	6,725	10,675	9,025	6,890	21,140	9,400	5,650	5,000	4,640	.....
19	12,175	6,950	.....	12,100	16,275	7,025	26,200	8,950	.....	4,960	4,540	4,580
20	10,700	6,850	7,900	12,250	.....	.....	50,400	8,400	5,575	4,960	4,360	4,540
21	9,650	.....	7,840	11,125	29,000	7,050	58,400	8,175	5,550	4,860	.....	4,400
22	9,175	14,410	7,650	9,900	19,250	7,425	44,000	.....	5,475	4,860	4,580	4,480
23	8,275	11,950	7,840	.....	14,950	7,900	34,200	7,650	5,360	4,860	4,780	4,240
24	.....	9,800	8,925	9,550	12,800	8,325	.....	7,450	5,260	.....	4,580	4,200
25	11,200	8,810	.....	9,900	11,050	8,300	21,790	7,500	5,360	5,060	4,580	.....
26	11,250	8,000	.....	10,760	9,575	8,000	23,000	7,625	.....	7,025	4,680	4,400
27	9,700	7,450	9,775	12,350	.....	.....	22,000	7,350	5,380	4,920	4,580	4,700
28	9,025	.....	12,350	12,225	9,775	9,525	18,940	7,200	5,320	4,660	.....	4,400
29	8,300	7,150	14,590	11,200	.....	13,050	17,040	.....	5,240	4,840	4,820	4,300
30	8,025	6,890	16,800	.....	.....	15,310	16,890	6,830	5,300	4,740	4,620	4,520
31	.....	.....	17,190	9,375	.....	18,250	.....	6,525	.....	.....	4,740	.....
1870–71.												
1	4,300	4,840	5,340	.....	4,920	8,950	7,975	8,630	5,600	5,000	4,840	6,175
2	.....	4,880	5,260	4,880	4,820	8,175	.....	8,150	5,890	.....	4,860	6,400
3	4,540	4,800	5,140	4,920	5,020	7,450	7,450	7,950	5,850	5,000	4,840	.....
4	4,580	4,660	.....	4,880	4,940	7,525	7,450	7,820	.....	.....	4,900	5,280
5	4,740	5,020	4,960	4,880	.....	.....	7,675	10,730	5,425	5,000	4,800	4,960
6	4,760	.....	5,040	4,840	5,625	8,200	.....	20,325	5,360	5,020	.....	4,960
7	4,660	5,360	4,900	4,840	4,820	7,840	7,525	.....	5,300	4,940	4,860	4,700
8	4,600	5,260	5,000	.....	4,720	7,600	7,100	21,545	5,100	4,480	4,800	.....
9	.....	4,920	5,000	4,980	4,600	7,400	.....	18,250	5,200	.....	4,720	4,840
10	4,660	4,960	5,400	4,960	4,700	7,050	8,325	14,300	5,060	4,840	4,660	.....
11	4,640	4,840	.....	4,800	4,700	7,350	8,440	12,225	.....	5,060	4,700	4,800
12	4,720	6,225	5,200	4,700	.....	.....	8,350	10,700	5,180	5,020	4,560	4,660
13	4,660	.....	5,300	4,600	5,100	17,160	9,750	9,825	5,180	4,900	.....	4,640
14	4,460	5,160	6,625	4,780	4,880	22,900	9,950	.....	5,160	4,840	4,860	4,680
15	4,480	5,060	6,950	.....	4,880	15,610	8,560	8,580	5,160	4,940	4,840	4,540
16	.....	5,140	6,275	4,700	4,700	11,425	.....	7,860	5,180	.....	4,700	4,600
17	4,640	5,100	5,525	5,340	4,760	9,700	7,425	7,500	5,200	4,820	4,740	.....
18	4,600	5,180	.....	5,950	4,700	8,925	7,720	7,075	.....	4,420	4,300	4,560
19	4,740	5,100	5,200	6,340	.....	.....	7,900	7,025	5,650	4,360	4,500	4,560
20	4,500	.....	5,280	6,100	7,375	7,900	7,500	6,890	6,725	4,680	.....	4,660
21	4,640	5,180	5,180	5,500	7,800	8,025	8,250	.....	6,950	4,560	4,600	4,640
22	4,500	4,940	5,180	.....	7,375	12,800	9,275	6,625	6,440	4,500	4,680	4,760
23	.....	4,920	5,340	6,400	6,625	15,400	.....	6,850	6,010	.....	4,560	4,320
24	5,140	.....	5,550	5,750	5,910	12,560	9,400	6,975	5,690	4,740	4,560	.....
25	4,940	5,400	.....	5,600	6,625	10,910	8,500	6,725	.....	4,500	4,600	4,800
26	4,620	5,320	5,450	5,690	.....	.....	8,025	6,500	5,360	4,600	4,420	4,440
27	4,880	.....	5,100	5,575	11,250	8,540	7,425	5,910	5,360	4,420	.....	4,600
28	4,640	5,690	4,700	5,320	10,300	8,175	7,250	.....	5,200	4,320	4,700	4,600
29	4,840	5,300	4,740	.....	.....	7,975	8,500	5,890	5,140	4,360	4,700	4,380
30	.....	5,280	5,080	5,180	.....	7,700	.....	5,650	5,040	.....	5,750	4,360
31	4,900	.....	4,720	4,960	.....	7,650	.....	5,550	.....	4,760	6,150	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1871–72.												
1	.....	5,600	8,025	6,400	5,300	5,280	6,100	9,250	7,175	6,100	6,075	.....
2	4,340	5,360	6,275	6,340	5,360	5,180	5,710	8,900	.....	5,850	5,750	11,2[illegible]
3	4,440	5,240	.....	6,175	5,200	.....	5,870	10,300	7,125	5,525	5,525	9,3[illegible]
4	4,500	5,300	5,930	6,030	.....	4,940	.....	13,500	7,150	.....	.....	8,0
5	4,320	.....	6,400	6,340	5,320	5,425	7,300	.....	7,250	6,600	5,550	7,575
6	4,300	5,450	6,575	6,575	5,120	5,525	8,400	10,700	11,500	6,500	5,360	7,27[illegible]
7	4,380	5,140	5,910	.....	5,100	5,260	.....	9,650	14,065	.....	5,240	6,5[illegible]
8	.....	4,980	5,650	8,750	5,220	5,000	11,050	8,925	12,350	5,810	5,100	50
9	4,740	5,000	6,010	8,400	5,220	4,820	15,100	8,440	.....	5,670	5,000	6,200
10	4,660	4,900	.....	7,900	4,960	.....	17,400	8,720	10,850	5,525	4,920	5,990
11	4,600	4,860	5,380	7,740	.....	5,380	25,500	8,600	11,025	5,400	.....	6,050
12	4,800	.....	5,360	7,760	4,960	5,730	27,400	.....	16,025	5,360	5,400	5,970
13	7,900	5,140	5,200	7,675	4,880	5,930	23,700	7,575	12,800	5,360	5,320	5,990
14	11,680	5,100	5,140	.....	5,000	5,525	.....	7,350	10,700	.....	5,400	6,320
15	.....	5,040	5,425	6,320	5,500	5,525	21,930	7,250	9,650	5,400	7,700	.....
16	6,870	15,670	5,240	5,320	5,400	5,850	17,400	6,910	.....	5,160	10,525	8,690
17	6,125	19,575	.....	5,140	5,380	.....	14,350	6,500	8,325	5,100	10,300	8,350
18	5,850	14,800	4,960	5,425	.....	5,120	12,300	6,440	7,650	4,980	.....	9,825
19	5,810	.....	5,040	5,040	5,140	5,100	11,375	.....	7,125	5,140	15,490	9,350
20	5,400	9,550	4,840	5,100	5,100	5,550	11,650	6,500	6,870	5,060	11,050	9,000
21	5,320	8,630	5,650	.....	5,040	5,340	.....	6,810	6,500	.....	8,560	8,900
22	.....	8,150	6,100	5,425	5,100	5,120	12,225	7,450	6,075	5,450	7,700	.....
23	5,300	8,200	5,320	5,320	5,400	4,900	14,530	7,150	.....	5,120	8,630	7,700
24	5,060	7,860	.....	5,360	5,040	.....	14,250	7,375	5,790	5,200	12,150	7,175
25	4,960	8,000	.....	5,650	.....	5,020	12,250	8,750	5,790	5,475	.....	6,790
26	5,000	.....	9,150	5,710	5,300	5,000	11,275	.....	5,870	5,200	8,025	6,810
27	4,940	8,660	9,850	5,200	5,750	4,880	10,650	7,400	5,990	5,200	7,250	6,850
28	5,000	8,150	9,725	.....	5,240	5,000	.....	7,050	6,750	.....	6,675	9,200
29	.....	8,440	8,600	5,020	5,120	5,450	11,425	6,950	6,700	5,450	6,300	.....
30	6,700	.....	7,525	5,525	.....	5,750	9,900	7,325	.....	5,770	6,225	8,810
31	5,950	.....	.....	5,550	.....	.....	.....	7,650	.....	6,250	8,275	.....
1872–73.												
1	8,050	8,100	.....	7,075	7,050	5,970	12,960	13,140	.....	4,840	5,120	5,060
2	7,675	7,975	7,200	7,050	.....	.....	14,650	13,230	6,810	4,800	5,080	5,000
3	7,300	.....	7,425	6,400	7,450	6,100	.....	14,350	6,575	4,920	.....	5,160
4	7,075	7,600	7,475	6,275	6,910	6,100	16,520	.....	6,500	.....	5,140	4,960
5	6,675	7,425	7,475	.....	6,790	6,400	17,340	15,250	6,340	5,000	5,140	4,940
6	.....	7,375	7,150	6,790	6,975	6,340	.....	14,100	6,175	.....	4,960	4,900
7	6,500	7,375	7,000	7,075	6,850	6,340	17,250	13,200	6,750	5,425	4,900	.....
8	6,175	11,000	.....	7,400	6,850	5,930	17,100	11,980	.....	5,100	4,940	5,200
9	6,625	13,320	6,890	6,830	.....	.....	17,750	11,175	6,750	4,960	4,940	5,040
10	7,250	.....	6,400	7,000	8,250	6,050	20,580	11,680	6,500	5,060	.....	5,160
11	7,075	9,850	6,950	7,200	7,475	6,200	25,700	.....	5,990	5,020	5,060	4,980
12	6,460	8,750	7,000	.....	7,400	6,100	27,550	14,710	6,030	5,000	5,060	5,000
13	.....	10,100	7,200	6,950	6,890	6,300	.....	19,575	6,125	.....	4,900	4,800
14	6,625	15,700	6,440	6,380	6,790	6,300	26,300	18,100	5,950	5,000	5,040	.....
15	9,200	14,590	.....	6,400	6,625	6,250	24,300	15,100	.....	5,000	5,000	5,040
16	9,675	14,440	6,420	6,400	.....	.....	21,825	12,650	5,750	4,960	5,040	5,160
17	8,600	.....	6,340	6,700	6,400	6,340	20,900	11,250	5,600	4,920	.....	5,060
18	7,700	11,150	6,200	8,400	6,300	6,440	20,900	.....	5,450	4,900	5,000	5,080
19	7,550	10,150	6,010	.....	6,125	6,300	20,360	9,950	5,340	5,280	5,000	5,000
20	.....	9,525	5,890	13,020	6,300	6,675	.....	9,175	5,340	.....	5,000	5,040
21	8,560	9,150	6,010	11,500	6,380	6,550	19,190	8,900	5,240	6,100	5,080	.....
22	7,860	8,400	.....	11,800	6,275	6,750	19,470	8,520	.....	5,710	5,080	6,500
23	7,525	8,275	7,100	9,900	.....	.....	18,430	9,025	5,140	5,260	5,160	5,500
24	7,200	.....	6,975	9,150	7,075	6,675	16,890	9,525	5,100	5,100	.....	5,320
25	7,075	8,025	.....	9,150	6,625	6,600	16,200	.....	5,000	5,040	5,260	5,425
26	6,890	8,150	8,275	.....	6,100	6,300	15,700	10,575	4,900	5,000	5,100	6,830
27	.....	8,325	8,225	8,075	6,300	6,380	.....	9,975	4,900	.....	5,200	5,930
28	9,550	.....	8,520	7,700	6,300	6,250	13,625	8,925	4,800	5,040	7,175	.....
29	10,330	7,760	.....	7,720	.....	6,225	13,785	9,300	.....	5,040	4,940	5,300
30	9,450	7,550	8,100	7,720	.....	.....	13,890	9,075	5,020	4,960	5,000	5,200
31	8,460	.....	7,575	7,525	.....	10,450	.....	8,250	.....	5,040	.....	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1873–74.												
1	5,120	7,975	6,870	5,890	.....	.....	6,950	12,470	9,650	7,450	6,525	5,160
2	5,040	.....	6,050	6,175	7,700	7,250	.....	11,920	10,350	6,790	.....	5,160
3	5,160	7,450	5,770	6,125	7,375	7,475	6,625	.....	10,150	6,500	6,050	5,060
4	4,960	7,000	5,850	.....	6,675	9,275	6,790	11,920	9,225	.....	5,670	5,200
5	.....	6,550	9,900	8,225	7,075	12,275	.....	12,900	8,480	.....	5,710	5,060
6	5,120	6,300	12,900	13,925	7,225	14,410	6,400	13,200	8,600	12,380	5,450	.....
7	5,500	6,460	.....	14,950	6,950	13,380	6,400	13,600	.....	11,680	5,400	5,040
8	14,065	6,300	10,330	16,375	.....	.....	6,790	12,500	9,200	9,550	5,360	5,000
9	15,700	.....	8,840	28,750	7,300	9,750	6,910	14,440	9,425	8,400	.....	5,000
10	10,880	8,500	8,580	30,800	6,500	8,150	7,700	.....	9,200	7,525	6,500	4,960
11	8,660	7,780	8,560	.....	7,720	7,300	7,925	13,200	8,200	7,450	6,360	4,640
12	.....	7,325	7,740	16,060	6,930	6,625	.....	14,950	7,820	.....	5,890	4,740
13	6,790	7,025	8,150	12,150	6,500	7,475	7,760	13,350	7,700	15,700	5,670	.....
14	6,175	6,930	.....	10,575	6,770	6,750	7,600	12,040	.....	17,925	5,830	4,520
15	5,950	6,810	9,500	9,100	.....	.....	7,900	12,675	7,860	15,400	7,250	5,140
16	5,810	.....	8,900	7,550	12,250	6,950	9,650	12,350	7,300	12,590	.....	4,960
17	5,650	6,340	7,975	8,400	11,150	6,790	11,125	.....	7,000	10,625	6,300	4,900
18	5,650	6,100	7,880	.....	10,550	7,125	10,475	14,500	8,300	9,125	5,850	5,020
19	.....	6,225	7,475	8,050	8,075	8,200	.....	12,725	17,280	.....	5,750	5,100
20	5,525	6,075	7,475	8,225	7,525	10,760	9,225	12,350	16,130	7,500	5,575	.....
21	8,400	6,250	.....	8,900	7,325	12,650	10,450	11,530	.....	6,975	5,425	5,525
22	26,100	6,050	6,650	8,500	.....	.....	11,950	14,100	9,975	7,760	5,550	5,360
23	19,830	.....	6,340	8,900	9,875	10,150	11,300	20,325	8,750	7,350	.....	5,140
24	13,080	5,870	5,990	10,650	11,800	9,150	10,850	.....	8,225	6,870	5,870	5,140
25	9,975	5,970	.....	.....	10,650	7,900	10,790	13,925	8,150	6,400	5,600	5,040
26	.....	6,750	6,300	11,200	9,100	7,625	.....	13,960	8,225	.....	5,500	5,060
27	7,860	.....	5,950	10,100	8,325	7,740	10,500	17,400	7,375	5,750	5,320	.....
28	8,150	6,340	.....	8,580	8,540	7,840	11,350	14,950	.....	5,650	5,280	4,900
29	13,550	6,300	5,930	8,400	.....	.....	12,410	12,675	6,320	5,600	5,220	4,980
30	10,910	.....	6,200	8,025	.....	7,375	13,320	11,475	6,320	6,030	.....	5,000
31	9,275	.....	6,700	7,575	.....	7,175	.....	.....	.....	6,700	5,360	.....
1874–75.												
1	5,000	.....	5,425	5,000	5,240	9,525	7,475	10,300	6,100	5,400	.....	5,280
2	5,380	5,120	5,770	4,740	5,360	9,000	8,840	.....	5,970	5,340	5,160	5,040
3	5,600	5,040	5,400	.....	5,240	7,700	12,010	12,225	5,890	5,160	5,040	4,950
4	.....	4,940	5,525	4,960	5,100	7,325	.....	12,650	5,790	.....	5,200	5,080
5	5,550	5,120	5,340	4,840	5,400	6,870	25,150	11,125	5,525	.....	5,020	.....
6	5,400	4,900	.....	4,900	5,200	6,675	31,700	9,600	.....	5,300	5,690	5,360
7	5,240	4,960	5,450	4,840	.....	.....	29,300	9,650	5,525	5,340	5,575	5,000
8	5,220	.....	5,220	4,640	5,710	6,175	.....	13,380	5,400	5,100	.....	5,260
9	5,160	5,040	5,200	4,760	5,670	5,770	19,470	.....	5,450	5,450	5,500	5,200
10	5,475	5,200	5,160	.....	5,730	5,575	15,920	13,650	5,930	5,600	6,650	5,000
11	.....	5,140	5,220	5,550	5,525	5,525	.....	13,750	6,500	.....	5,340	5,260
12	6,010	5,000	5,080	5,360	5,750	5,475	17,310	12,900	6,750	5,300	5,040	.....
13	5,670	4,920	.....	5,080	6,125	5,550	16,695	12,150	.....	5,060	5,080	5,200
14	5,475	4,940	5,160	4,940	.....	.....	14,500	12,300	6,225	5,200	5,280	5,040
15	5,380	.....	5,710	5,380	6,460	5,650	12,620	10,730	5,910	5,060	.....	5,180
16	5,360	5,240	5,180	5,475	6,460	6,100	13,625	.....	5,690	5,120	5,180	5,140
17	5,200	5,000	5,160	.....	5,770	7,100	16,400	9,275	.....	5,100	5,120	5,160
18	.....	4,940	5,160	5,810	5,790	8,175	.....	8,500	4,900	.....	5,120	5,240
19	5,320	4,880	4,860	5,575	5,750	8,350	19,950	8,250	5,790	5,240	5,380	.....
20	5,280	5,140	.....	5,475	5,625	7,760	15,250	7,800	.....	5,160	7,125	5,220
21	4,960	4,860	5,060	5,320	.....	.....	12,530	7,860	12,275	5,060	6,930	5,280
22	5,000	.....	5,120	5,380	5,600	7,000	10,760	8,150	12,100	5,000	.....	5,260
23	5,180	5,220	4,960	5,340	5,360	6,750	9,975	.....	7,900	5,020	6,340	5,220
24	5,120	5,200	4,900	.....	5,400	6,575	9,850	8,900	6,625	5,100	5,810	5,280
25	.....	5,160	.....	5,425	5,750	6,050	.....	8,250	6,460	.....	5,525	5,160
26	5,220	.....	4,560	5,400	7,740	5,770	11,200	8,175	6,175	5,240	5,400	.....
27	5,140	5,240	.....	6,250	8,350	5,575	11,475	8,350	.....	5,100	5,360	5,260
28	5,240	5,200	5,160	5,380	.....	.....	11,000	7,700	5,990	5,040	5,280	5,000
29	5,080	.....	5,100	5,240	.....	6,050	10,360	6,890	5,870	.....	.....	5,000
30	5,000	5,750	5,500	5,220	.....	6,150	10,300	.....	7,200	4,940	5,200	5,160
31	5,000	.....	5,600	.....	.....	6,675	.....	6,500	.....	4,920	5,320	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1875–76.												
1	5,280	12,175	7,100	6,200	5,910	5,670	21,825	13,260	7,780	5,600	5,525	4,880
2	5,140	12,350	7,780	.....	6,050	5,525	.....	13,380	7,475	.....	5,910	4,740
3	.....	9,125	6,790	8,900	7,325	5,710	14,650	12,250	6,890	5,340	5,770	.....
4	5,400	7,700	6,100	10,075	6,175	5,650	13,995	11,680	.....	.....	5,710	4,860
5	5,220	6,850	.....	9,050	6,300	.....	12,775	11,500	8,025	5,450	5,450	4,860
6	5,220	6,725	6,075	7,250	.....	5,500	12,800	11,075	11,300	5,340	.....	4,940
7	5,360	.....	5,930	7,250	5,650	6,250	13,440	.....	10,500	5,300	5,575	4,900
8	5,400	6,275	5,850	6,625	6,050	12,900	14,680	12,470	9,075	5,140	5,120	4,900
9	5,200	6,075	5,790	.....	6,750	19,280	.....	15,100	7,975	.....	5,200	4,560
10	.....	5,850	5,770	6,550	6,750	18,610	14,440	17,715	7,525	5,425	5,220	.....
11	6,275	6,930	5,750	6,910	6,360	15,790	14,350	18,130	.....	5,200	5,340	5,000
12	5,870	10,150	.....	7,025	6,340	.....	14,410	22,700	7,575	4,960	5,100	4,900
13	5,525	9,825	5,340	7,175	.....	10,600	.....	23,200	6,950	5,200	.....	4,860
14	5,400	.....	5,500	6,380	8,025	10,150	19,220	.....	6,975	5,300	5,450	4,860
15	5,400	7,900	5,850	5,650	7,400	10,050	23,200	14,150	6,910	5,240	5,400	4,920
16	5,320	7,760	5,525	.....	7,500	9,000	.....	12,850	6,725	.....	5,200	4,400
17	.....	8,225	5,550	5,650	7,700	8,225	29,000	11,530	6,675	5,320	5,040	.....
18	5,550	8,540	6,050	5,650	7,575	7,860	23,800	11,125	.....	5,340	4,960	5,040
19	5,400	7,925	.....	5,750	7,350	.....	19,950	10,910	6,150	4,900	5,160	4,900
20	5,650	7,450	7,075	6,380	.....	7,050	16,375	10,650	5,990	5,000	.....	4,960
21	5,525	.....	5,850	7,250	6,930	7,050	15,010	.....	5,950	5,060	5,280	5,000
22	5,300	7,325	5,400	7,740	6,625	15,100	14,950	10,390	5,970	5,040	5,060	5,380
23	5,240	6,550	5,600	.....	6,300	16,325	.....	11,620	5,910	.....	4,980	5,200
24	.....	6,320	5,890	6,480	7,025	15,250	15,280	12,275	5,890	5,220	4,900	.....
25	5,475	.....	.....	6,100	7,050	13,260	16,325	10,500	.....	5,300	4,840	5,280
26	5,260	6,770	.....	5,930	6,300	.....	15,640	9,525	5,650	5,575	4,740	5,140
27	5,300	7,150	6,250	5,910	.....	28,650	14,470	9,175	5,500	5,475	.....	5,080
28	5,360	.....	6,550	5,575	5,690	27,100	13,625	.....	5,710	5,160	4,960	5,120
29	5,650	9,000	6,550	5,710	5,625	25,150	13,550	8,400	5,990	5,120	4,880	5,000
30	5,670	7,125	6,525	.....	.....	31,750	.....	8,720	5,730	.....	4,980	5,200
31	.....	.....	6,300	6,225	.....	28,000	.....	8,480	.....	6,175	4,820	.....
1876–77.												
1	.....	4,960	5,650	5,280	5,200	5,200	.....	9,425	5,790	.....	8,100	6,050
2	5,400	4,960	5,525	5,475	5,475	5,120	16,730	9,600	5,690	7,075	6,790	.....
3	5,320	4,900	.....	5,670	5,320	5,525	15,640	11,325	.....	7,425	6,050	5,890
4	5,360	4,800	5,425	5,690	.....	.....	15,160	10,700	5,600	.....	5,625	5,690
5	5,200	.....	5,380	5,690	5,300	7,200	14,300	9,600	5,525	6,460	.....	5,475
6	5,360	5,000	5,280	5,670	5,300	7,200	14,350	.....	5,400	5,810	5,550	5,180
7	5,180	5,100	5,340	.....	5,340	7,625	15,340	8,150	5,550	5,690	5,500	5,360
8	.....	4,920	5,100	5,300	5,200	7,325	.....	7,900	5,750	.....	5,450	5,360
9	5,450	5,100	5,060	5,475	5,080	7,625	13,230	7,700	6,380	5,600	5,320	.....
10	5,450	5,280	.....	5,500	5,400	11,890	12,440	7,450	.....	5,475	5,000	5,400
11	5,200	5,910	5,500	5,525	.....	.....	11,890	7,780	6,225	5,550	5,360	5,320
12	5,200	.....	5,180	5,400	5,120	16,425	.....	7,700	6,010	5,550	.....	5,140
13	5,240	6,700	4,920	5,525	5,670	13,925	11,425	.....	6,175	5,575	5,260	5,100
14	4,900	6,500	4,960	.....	5,670	11,650	10,650	7,275	5,970	5,400	5,380	5,220
15	.....	6,150	4,840	5,790	5,300	10,390	.....	6,910	5,750	.....	5,340	5,080
16	5,400	5,950	4,940	5,730	5,100	9,375	9,600	7,100	5,650	5,450	5,400	.....
17	5,400	5,690	.....	5,790	5,160	8,520	9,375	7,200	.....	5,300	5,950	5,140
18	5,160	5,650	5,280	5,690	.....	.....	9,225	7,075	5,600	5,140	6,790	5,260
19	4,940	.....	5,360	5,450	5,220	7,450	9,650	7,100	5,550	5,300	.....	5,320
20	4,740	5,550	5,200	5,380	5,525	7,325	11,800	.....	5,100	5,450	5,850	5,280
21	4,900	5,550	5,200	.....	5,160	7,100	15,430	6,275	5,450	5,500	5,690	5,000
22	.....	5,650	5,120	5,320	4,980	7,300	.....	6,675	5,450	.....	5,525	5,000
23	4,900	6,275	5,140	5,340	5,160	8,175	14,710	6,600	5,380	6,100	5,380	.....
24	4,740	6,360	.....	5,625	5,100	9,400	12,530	6,250	.....	5,600	5,340	5,120
25	4,860	6,125	.....	5,850	.....	.....	11,770	6,910	5,575	5,400	5,320	4,980
26	5,060	.....	5,320	5,690	5,320	9,975	11,620	7,550	5,360	5,400	.....	5,020
27	4,960	5,990	5,280	5,425	5,280	13,500	11,000	.....	5,260	5,400	10,550	4,880
28	4,860	5,850	5,180	.....	5,200	29,100	9,775	7,050	5,400	5,260	11,500	4,900
29	.....	5,625	5,040	5,400	.....	41,500	.....	6,850	5,380	.....	7,860	4,780
30	4,860	.....	5,240	5,280	.....	38,000	9,225	6,500	5,020	5,500	6,870	.....
31	5,000	.....	.....	5,380	.....	26,500	.....	6,050	.....	5,500	6,300	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1877–78.												
1	4,700	6,320	11,950	6,100	6,460	8,600	12,275	32,700	5,830	6,125	5,380	.....
2	4,700	6,500	.....	5,650	6,725	8,580	11,450	28,550	.....	5,690	5,340	5,475
3	4,600	7,720	9,525	5,650	.....	.....	11,225	22,350	5,690	5,525	5,550	5,400
4	4,600	.....	8,630	5,550	7,000	10,790	10,760	17,310	5,575	.....	.....	5,360
5	4,960	11,125	8,540	5,600	6,380	11,425	10,730	.....	5,450	.....	5,850	5,450
6	6,650	10,300	9,200	.....	6,360	11,450	11,275	14,300	5,500	.....	5,340	5,600
7	.....	12,675	13,500	6,100	6,300	11,050	.....	16,765	5,320	.....	5,380	5,575
8	6,300	11,890	13,410	5,750	6,360	10,730	11,250	14,250	5,400	5,550	5,810	.....
9	5,850	10,760	.....	5,650	6,460	13,785	10,575	12,150	.....	5,500	6,700	5,575
10	6,010	16,325	9,850	5,475	.....	.....	10,075	11,225	7,740	5,080	8,600	5,450
11	6,650	.....	9,500	5,970	8,750	16,165	.....	10,420	8,300	5,300	.....	5,340
12	7,720	12,750	8,400	7,820	8,630	16,920	10,450	.....	7,650	5,340	9,100	5,450
13	8,600	11,225	8,300	.....	7,780	14,980	18,980	9,200	7,250	5,140	7,650	5,360
14	.....	9,775	8,200	8,720	7,625	14,470	.....	8,660	7,000	.....	6,790	5,400
15	7,675	9,125	7,150	9,175	7,625	14,150	16,555	8,200	6,575	5,340	6,125	.....
16	7,025	8,540	.....	9,250	6,910	13,600	13,750	8,100	.....	5,300	5,850	5,730
17	6,770	8,225	7,840	8,660	.....	.....	12,100	7,740	5,950	5,380	5,830	5,575
18	6,870	.....	7,840	7,600	6,675	12,960	11,350	7,525	5,990	5,240	.....	5,400
19	6,790	8,300	7,400	7,150	7,000	14,275	11,050	.....	6,010	5,120	5,910	5,320
20	6,625	8,480	7,075	.....	6,320	14,100	10,300	7,500	5,890	5,000	5,950	5,260
21	.....	7,800	7,025	7,100	6,030	13,080	.....	6,975	5,770	.....	5,810	5,200
22	7,700	7,500	6,950	7,840	6,275	11,980	9,725	6,950	5,525	5,280	5,600	.....
23	8,300	7,150	.....	9,250	7,050	5,930	10,240	6,910	.....	5,280	5,425	5,320
24	8,900	7,075	6,675	9,475	.....	.....	10,025	6,975	8,100	5,140	5,550	5,300
25	8,375	.....	.....	7,760	10,210	11,100	9,575	6,575	10,300	5,400	.....	4,920
26	7,700	8,690	6,625	7,700	9,775	11,050	9,775	.....	9,400	5,280	5,650	4,800
27	7,840	14,100	6,100	.....	9,075	10,525	16,890	6,500	7,860	5,160	5,690	4,900
28	.....	17,855	6,050	8,420	8,810	10,150	.....	6,275	7,075	.....	5,750	4,800
29	6,420	.....	6,050	8,540	.....	10,150	23,900	6,225	6,500	5,300	5,575	.....
30	6,850	12,750	.....	8,250	.....	11,375	30,100	5,970	.....	5,425	5,525	4,760
31	6,550	.....	6,050	7,225	.....	.....	.....	5,830	.....	5,320	5,550	.....
1878–79.												
1	4,860	5,710	.....	6,550	5,810	7,700	10,790	24,600	.....	6,700	5,500	5,260
2	4,780	5,790	9,975	6,100	.....	.....	10,025	24,200	5,950	6,420	5,360	5,140
3	4,520	.....	12,300	6,300	6,300	7,425	.....	19,310	5,810	5,930	.....	5,060
4	4,700	5,550	23,200	6,830	5,400	7,025	9,700	.....	6,360	.....	5,240	5,320
5	4,920	5,400	20,150	.....	5,500	7,050	9,100	13,995	8,480	5,360	5,240	5,060
6	.....	5,380	15,580	7,200	5,500	7,525	.....	12,875	9,325	.....	5,000	5,320
7	4,800	5,320	12,175	6,810	5,575	7,175	8,075	12,850	8,925	5,550	5,000	.....
8	4,640	5,200	.....	6,200	5,650	6,950	9,275	12,850	.....	5,500	5,020	5,260
9	4,700	5,200	9,300	6,075	.....	.....	10,300	11,075	7,500	5,380	4,880	5,260
10	4,600	.....	8,600	6,200	6,100	6,600	11,350	10,420	6,950	5,000	.....	5,180
11	4,740	5,240	23,000	6,480	5,575	6,830	12,300	.....	6,460	5,360	5,160	5,320
12	4,740	5,240	49,600	.....	7,125	8,050	11,860	9,425	6,100	5,120	5,100	5,200
13	.....	5,060	36,000	6,275	10,450	9,200	.....	9,350	6,930	.....	5,040	5,180
14	4,940	5,080	23,300	5,770	13,110	9,100	11,000	9,325	7,075	5,000	4,920	.....
15	4,980	5,120	.....	5,950	14,500	8,630	11,920	9,725	.....	5,320	4,940	5,240
16	4,900	4,900	13,960	6,400	.....	.....	13,575	9,400	7,000	5,120	4,880	7,400
17	4,920	.....	11,375	6,440	9,450	8,440	15,340	9,925	9,150	5,280	.....	7,150
18	4,800	5,380	10,025	5,850	8,480	7,800	15,955	.....	10,940	5,280	5,140	5,990
19	4,800	6,525	10,025	.....	7,820	7,300	16,830	11,400	7,175	5,220	5,690	5,450
20	.....	9,150	8,780	6,200	7,425	7,200	.....	11,860	8,275	.....	10,850	5,360
21	4,840	8,580	7,900	6,320	7,250	7,175	15,790	12,800	7,450	5,320	10,390	.....
22	4,880	5,810	.....	5,850	7,550	7,125	16,555	11,590	.....	5,320	7,975	5,320
23	4,640	9,975	9,725	5,850	.....	.....	18,490	10,450	6,750	5,120	6,750	5,100
24	5,320	.....	9,500	5,930	6,930	7,275	20,325	8,975	6,050	5,140	.....	4,840
25	6,950	14,440	.....	5,575	6,850	7,475	21,965	.....	5,730	4,960	6,030	5,000
26	8,100	11,450	9,075	.....	6,225	8,200	20,395	7,675	5,830	5,600	5,380	5,040
27	.....	9,950	8,660	7,375	6,420	9,100	.....	7,200	5,790	.....	5,400	5,020
28	6,400	.....	8,300	5,730	7,625	8,840	17,680	6,850	5,650	6,810	5,525	.....
29	5,500	12,990	.....	5,810	.....	8,975	18,340	6,810	.....	7,400	5,340	5,100
30	5,710	12,990	7,450	5,850	.....	.....	21,650	6,300	6,175	6,380	5,300	4,920
31	5,710	.....	7,840	5,790	.....	11,800	.....	6,075	.....	5,690	.....	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1879–80.												
1	4,880	5,220	10,790	5,670	.....	11,740	6,675	8,400	5,080	4,780	.....	4,660
2	5,000	.....	8,025	5,240	13,020	13,020	6,750	.....	5,550	4,820	5,060	4,560
3	4,960	5,140	7,050	5,830	10,300	11,800	7,075	8,950	5,830	4,840	4,900	4,480
4	4,980	5,040	6,790	.....	8,600	10,790	.....	8,100	5,425	.....	4,980	4,560
5	.....	5,000	6,380	5,790	8,560	10,760	13,350	7,700	5,220	.....	4,860	.....
6	5,160	4,800	6,420	5,750	8,150	12,650	18,190	8,000	.....	5,650	4,980	4,700
7	5,040	4,920	.....	5,790	8,050	.....	17,190	7,760	5,200	5,100	5,000	4,420
8	4,940	4,880	9,900	6,075	.....	12,410	.....	7,550	5,100	5,020	.....	4,480
9	4,920	.....	12,825	5,770	7,525	10,575	10,475	.....	5,200	4,880	5,020	4,400
10	4,940	5,300	9,350	5,830	6,770	9,250	9,575	6,550	5,320	4,840	4,900	4,320
11	4,980	5,340	7,950	.....	6,625	8,580	.....	6,360	5,240	.....	4,900	4,400
12	.....	5,575	7,880	5,600	6,075	8,250	8,150	6,320	5,160	4,880	4,660	.....
13	5,060	5,950	7,975	5,710	6,650	7,675	7,950	6,300	.....	4,920	4,900	4,440
14	4,940	7,300	.....	6,440	9,700	.....	7,600	5,870	5,240	4,700	4,740	4,320
15	4,940	8,520	6,700	5,870	.....	7,600	7,475	5,930	5,000	5,040	.....	4,320
16	4,900	.....	6,770	5,400	13,675	7,250	7,225	.....	5,160	4,980	4,960	4,200
17	4,920	7,325	7,075	5,670	11,980	7,350	7,450	5,690	5,000	4,980	4,660	4,240
18	4,860	6,890	6,300	.....	10,700	7,150	.....	5,320	5,140	.....	4,560	4,560
19	.....	6,625	5,550	5,850	11,650	7,075	9,725	5,525	4,700	5,060	4,660	.....
20	5,140	6,225	5,730	5,575	13,350	7,000	8,925	5,380	.....	4,980	4,700	5,040
21	4,960	6,175	.....	5,850	11,500	.....	8,870	5,625	5,020	4,940	4,640	4,920
22	4,980	5,475	6,300	6,275	.....	7,400	8,975	5,380	4,980	5,060	.....	4,860
23	4,900	.....	5,850	6,125	9,400	7,450	8,540	.....	4,900	5,475	4,660	4,400
24	4,940	5,525	5,300	7,100	8,540	7,700	8,175	5,400	4,520	5,475	4,700	4,460
25	4,940	5,360	.....	.....	7,860	7,475	.....	5,340	4,900	.....	4,660	4,560
26	.....	5,340	6,200	7,880	7,800	6,870	7,450	5,300	4,820	5,240	4,560	.....
27	5,040	.....	5,600	7,475	7,720	6,625	7,275	5,080	.....	5,160	4,560	4,660
28	4,860	5,300	.....	8,900	8,150	.....	7,325	5,060	4,900	5,080	4,580	4,260
29	4,960	5,300	5,625	13,925	.....	6,625	7,375	5,060	4,840	5,040	.....	4,400
30	4,920	.....	5,360	12,380	.....	6,460	7,400	.....	4,900	5,080	4,660	4,400
31	5,240	.....	6,200	13,725	.....	6,340	.....	5,220	.....	4,800	4,740	.....
1880–81.												
1	4,420	5,320	4,780	4,360	5,240	6,420	8,150	.....	6,950	5,970	5,930	4,500
2	4,080	10,025	4,960	.....	5,500	9,150	8,350	10,270	6,575	5,690	5,320	4,460
3	.....	7,100	4,900	4,680	5,600	10,575	.....	9,300	5,930	.....	5,240	4,680
4	4,140	6,320	4,940	4,500	5,550	12,070	8,690	8,720	5,910	.....	5,280	.....
5	4,140	5,320	.....	4,440	5,320	11,250	8,275	8,420	.....	5,220	5,220	5,200
6	4,380	5,425	4,860	4,480	.....	.....	7,840	8,150	5,990	5,040	5,040	4,940
7	4,280	.....	4,800	4,080	5,100	9,975	.....	8,025	5,550	5,100	.....	4,980
8	3,970	7,625	4,900	4,280	4,800	9,200	7,575	.....	5,525	5,060	5,160	4,980
9	4,060	8,050	5,000	.....	4,780	9,350	7,700	8,175	5,750	5,000	5,140	5,000
10	.....	6,700	4,700	4,620	4,640	10,360	.....	8,325	5,710	.....	5,260	4,840
11	4,100	6,100	5,180	4,360	4,680	14,530	9,475	8,500	6,175	4,900	5,060	.....
12	4,100	5,600	.....	4,440	4,800	16,800	10,790	10,575	.....	5,040	4,980	5,080
13	4,000	6,420	4,860	4,440	.....	.....	11,425	12,200	7,700	5,160	4,900	4,920
14	4,020	.....	4,820	4,420	8,870	14,650	11,075	10,700	7,075	4,920	.....	4,940
15	4,060	5,790	4,900	4,980	9,275	12,930	11,075	.....	6,950	4,980	4,960	4,980
16	4,040	5,400	4,900	.....	7,820	12,560	12,040	8,375	6,650	4,700	5,000	4,820
17	.....	5,300	5,000	4,800	7,900	12,700	.....	12,010	5,950	.....	4,940	4,980
18	4,080	5,020	4,760	5,040	7,400	12,010	11,950	17,820	5,790	5,020	4,940	.....
19	4,080	5,080	.....	4,640	7,325	11,025	12,300	16,225	.....	4,940	4,940	5,060
20	4,080	5,080	5,020	4,720	.....	.....	12,150	16,025	5,525	4,900	4,640	5,060
21	4,100	.....	4,520	4,840	6,600	11,375	11,950	14,980	5,400	4,860	.....	4,980
22	4,080	5,120	4,520	4,720	3,985	12,100	11,920	.....	5,300	4,960	4,620	4,740
23	4,040	5,060	4,520	.....	5,850	12,225	12,650	11,770	5,240	5,000	4,600	4,440
24	.....	5,000	4,460	4,580	6,650	11,650	.....	10,650	5,380	.....	4,560	4,940
25	4,200	.....	.....	5,040	5,930	10,650	13,050	9,550	5,200	4,940	4,600	.....
26	4,480	4,900	.....	4,740	5,970	9,550	15,040	8,560	.....	4,940	4,640	.....
27	4,400	4,820	4,480	4,800	.....	.....	14,560	8,075	5,200	7,350	4,600	4,980
28	4,320	.....	4,400	5,320	5,625	9,050	13,320	7,700	5,260	7,880	.....	4,920
29	4,360	4,900	4,560	5,600	.....	8,440	12,850	.....	5,425	7,025	4,660	4,800
30	4,360	4,940	4,480	.....	.....	8,125	12,825	7,075	5,625	6,725	4,600	4,600
31	.....	.....	4,600	5,750	.....	8,300	.....	6,810	.....	.....	4,560	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1881–82.												
1	4,840	5,380	5,360	.....	7,200	7,500	10,100	7,375	12,900	5,100	4,900	4,240
2	.....	5,710	6,725	12,300	7,025	9,450	.....	7,325	11,300	.....	4,800	4,240
3	5,000	5,360	8,600	8,600	6,675	16,025	8,975	7,150	12,960	5,730	4,900	.....
4	4,680	5,320	.....	6,550	7,275	21,930	9,475	6,950	.....	.....	4,820	4,300
5	4,860	5,600	7,300	6,890	.....	.....	9,725	6,675	11,025	6,225	4,840	4,160
6	4,660	.....	6,650	7,125	6,770	16,800	.....	6,700	14,980	5,475	.....	4,160
7	4,700	6,300	6,500	6,850	6,225	15,700	10,880	.....	13,050	5,260	4,920	4,160
8	4,440	6,010	6,675	.....	5,790	14,275	10,360	6,500	11,150	5,240	4,900	4,100
9	.....	6,300	6,850	6,950	6,360	12,960	.....	6,010	9,800	.....	4,800	4,100
10	4,580	7,575	6,550	7,840	5,970	12,275	10,390	6,550	9,075	5,220	4,860	.....
11	4,560	7,625	.....	8,100	6,200	13,550	10,150	7,075	.....	5,180	4,760	4,100
12	4,540	7,075	5,400	7,740	.....	.....	9,650	7,575	8,150	5,080	4,800	4,240
13	4,440	.....	5,200	7,275	6,175	12,700	8,810	7,700	7,500	4,960	.....	4,400
14	4,600	6,575	5,500	6,830	6,275	11,650	8,420	.....	6,810	5,000	4,940	4,440
15	4,600	6,870	6,010	.....	7,860	10,420	8,000	8,540	6,700	5,040	4,840	4,400
16	.....	6,440	6,460	6,625	9,050	9,425	.....	9,750	6,650	.....	4,780	4,420
17	4,660	6,050	5,930	6,550	10,300	9,475	7,840	10,550	6,100	5,220	4,840	.....
18	4,700	5,970	.....	6,420	12,250	9,100	7,760	9,150	.....	5,100	4,880	4,480
19	4,640	5,650	5,910	5,950	.....	.....	7,975	8,600	6,340	5,080	4,600	4,480
20	5,140	.....	5,850	6,125	12,410	8,950	8,275	8,000	7,375	4,800	.....	4,480
21	5,400	7,950	5,810	5,950	10,850	9,100	9,650	.....	9,300	4,900	4,440	4,440
22	5,240	7,700	5,770	.....	9,575	9,325	9,950	10,075	8,750	4,860	4,520	4,400
23	.....	6,950	5,690	7,325	8,630	9,175	.....	10,150	7,425	.....	4,480	4,440
24	4,840	.....	8,810	7,450	8,690	8,810	8,460	10,820	6,830	4,880	4,520	.....
25	4,940	5,890	.....	6,125	8,375	8,540	7,900	12,225	.....	4,800	4,520	12,380
26	4,820	5,450	8,975	5,425	.....	.....	7,200	10,450	5,890	4,860	4,480	11,980
27	4,680	.....	8,325	5,810	5,360	7,325	7,025	9,450	5,100	4,800	.....	9,000
28	4,600	5,710	11,500	7,075	7,475	8,250	6,910	.....	5,600	4,880	4,440	7,700
29	4,520	5,080	15,400	.....	.....	11,025	7,450	9,200	5,400	4,840	4,480	6,460
30	.....	5,120	15,100	8,900	.....	11,375	.....	16,950	5,300	.....	4,360	5,990
31	4,720	.....	18,610	7,950	.....	10,625	.....	16,130	.....	4,780	4,320	.....
1882–83.												
1	.....	4,940	4,420	4,300	4,340	5,400	.....	7,625	7,025	.....	4,780	4,080
2	5,380	4,900	4,340	4,300	4,340	4,960	6,575	7,225	6,930	4,940	4,620	.....
3	5,140	4,900	.....	4,400	4,340	5,260	6,500	7,050	.....	4,960	4,740	4,080
4	4,920	4,920	4,460	4,340	.....	.....	6,790	7,075	6,480	.....	4,680	4,040
5	4,820	.....	4,340	4,320	4,160	6,125	.....	7,500	5,670	5,020	.....	4,000
6	4,860	5,000	4,320	4,260	4,420	5,710	7,275	.....	5,525	4,860	4,900	3,940
7	4,760	4,860	4,340	.....	4,300	5,600	9,350	8,300	5,750	5,100	4,760	4,960
8	.....	4,280	4,400	4,260	4,300	6,400	.....	10,150	5,750	.....	4,760	3,750
9	5,000	4,240	4,340	4,260	4,340	5,360	9,900	9,025	5,910	4,960	4,760	.....
10	5,000	4,240	.....	4,380	4,340	5,000	10,940	8,950	.....	4,880	4,700	3,895
11	4,880	4,240	4,320	4,300	.....	.....	13,320	7,900	5,650	4,820	4,760	3,810
12	4,780	.....	4,160	4,340	4,500	5,320	14,950	7,675	5,340	4,860	.....	3,690
13	4,880	4,320	4,160	4,380	4,540	4,940	16,800	.....	6,500	4,880	4,840	3,605
14	4,760	4,240	4,160	.....	6,750	5,240	23,100	7,555	6,250	4,940	4,640	3,590
15	.....	4,240	4,160	4,420	4,500	5,200	.....	6,950	5,870	.....	4,580	3,560
16	5,100	4,240	4,160	4,120	4,540	5,200	19,910	7,150	5,670	5,120	4,380	.....
17	5,000	4,240	.....	4,040	4,420	5,220	17,960	7,225	.....	5,670	4,240	3,515
18	4,980	4,280	4,500	4,120	.....	.....	18,160	7,000	5,340	6,625	4,040	3,690
19	4,860	.....	4,420	4,140	4,840	5,670	18,160	6,725	5,120	5,500	.....	3,400
20	5,060	4,400	4,340	4,080	5,160	5,970	15,010	.....	5,060	5,340	4,160	3,285
21	5,040	4,420	4,340	.....	5,360	6,275	15,340	6,575	5,550	5,060	4,240	3,320
22	.....	4,420	4,340	4,540	5,240	5,890	.....	6,525	13,380	.....	4,200	3,300
23	5,240	4,300	4,260	4,680	5,340	6,200	12,530	8,400	8,560	5,040	4,160	.....
24	5,040	4,320	.....	4,620	5,400	5,525	11,075	12,350	.....	4,880	4,200	3,460
25	4,940	4,340	.....	4,260	.....	.....	10,125	12,500	6,250	4,620	3,910	3,440
26	5,040	.....	4,420	4,420	5,200	5,710	9,225	10,700	5,360	4,820	.....	3,300
27	5,100	4,420	4,380	4,420	5,360	5,710	9,025	.....	5,020	4,740	4,160	3,420
28	5,000	4,560	4,420	.....	4,920	6,175	8,660	8,100	5,080	4,760	4,180	3,340
29	.....	4,420	4,420	4,340	.....	6,810	.....	7,700	5,000	.....	4,260	3,270
30	4,900	.....	4,340	4,320	.....	6,850	7,720	7,300	4,920	4,820	4,200	.....
31	4,900	.....	.....	4,300	.....	6,575	.....	6,975	.....	4,720	4,120	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1883–84.												
1	3,545	6,320	4,980	4,840	5,220	7,550	17,190	9,725	.....	4,920	4,820	4,040
2	3,850	5,525	.....	4,900	5,140	.....	16,200	10,075	6,440	4,800	4,760	3,770
3	4,160	5,140	4,880	5,140	.....	6,950	.....	.....	6,500	4,800	.....	3,880
4	4,300	.....	4,840	5,320	5,525	7,125	13,700	.....	6,360	.....	4,800	3,590
5	4,320	5,140	4,540	4,980	5,040	6,850	14,410	9,400	6,030	.....	4,760	3,400
6	4,340	5,080	4,800	.....	5,040	6,010	.....	9,450	5,950	.....	4,640	3,380
7	.....	4,920	4,880	6,200	5,790	5,830	12,650	9,100	.....	4,700	4,560	.....
8	4,340	5,000	4,800	5,000	6,030	5,870	12,650	8,750	.....	4,800	4,500	3,360
9	4,200	4,840	.....	5,100	6,525	.....	13,320	8,690	5,750	4,840	4,640	3,320
10	4,260	4,640	4,920	5,830	.....	6,125	13,820	.....	5,020	4,860	.....	3,575
11	4,240	.....	4,860	6,625	6,360	5,425	15,250	.....	5,080	4,600	4,840	3,690
12	4,200	4,860	4,800	7,000	6,200	5,575	16,225	8,900	5,500	4,800	4,700	4,840
13	4,240	4,760	4,840	.....	5,710	6,440	.....	8,540	5,600	.....	4,700	4,460
14	.....	4,840	4,700	6,340	5,970	8,400	16,200	7,975	.....	4,500	4,740	.....
15	4,340	4,800	4,200	5,890	7,225	9,475	15,955	8,780	.....	4,600	4,680	4,880
16	4,420	4,760	.....	5,770	8,225	.....	17,010	9,375	5,320	4,760	4,660	4,660
17	4,340	4,680	4,920	5,525	.....	9,275	23,700	.....	4,800	4,740	.....	4,660
18	4,380	.....	4,880	5,160	8,720	8,560	26,000	.....	4,780	4,700	4,780	4,260
19	4,340	4,840	4,700	5,200	10,700	8,350	30,800	8,520	4,900	4,660	4,660	4,340
20	4,200	4,800	4,720	.....	11,560	8,150	.....	8,050	4,860	.....	4,660	4,160
21	.....	4,800	4,200	5,040	12,200	8,810	22,200	8,500	.....	4,840	4,640	.....
22	4,460	4,500	4,040	5,400	11,980	9,025	20,430	12,150	.....	4,660	4,620	4,340
23	4,420	4,580	.....	4,900	11,650	.....	17,820	10,790	4,920	4,340	6,810	4,260
24	4,500	4,380	4,240	4,860	.....	12,225	15,250	.....	4,660	4,760	.....	4,260
25	4,200	.....	.....	4,940	11,300	15,040	14,150	.....	4,800	4,600	4,880	4,260
26	4,160	4,620	4,220	5,100	9,700	17,925	13,995	10,100	4,740	4,700	4,740	4,160
27	4,240	4,860	4,000	.....	9,025	25,200	.....	8,870	4,920	.....	4,660	4,180
28	.....	5,160	4,000	5,400	8,400	31,000	14,030	8,150	.....	4,700	4,660	.....
29	4,460	.....	4,000	5,000	8,100	33,800	13,440	8,480	.....	4,800	4,600	4,160
30	5,120	5,750	.....	5,080	.....	.....	12,100	8,950	4,900	4,760	4,660	4,220
31	5,770	.....	4,800	5,000	.....	21,475	.....	.....	.....	4,420	.....	.....
1884–85.												
1	4,160	4,160	5,380	7,100	.....	.....	6,790	12,325	5,500	5,160	4,760	4,960
2	4,200	.....	4,800	9,475	5,710	4,980	.....	11,125	5,790	4,980	.....	5,160
3	4,160	4,200	4,880	9,225	5,625	5,260	9,400	.....	6,050	4,980	4,760	5,260
4	4,160	4,120	4,740	.....	5,340	5,380	13,020	9,875	5,890	.....	5,180	5,000
5	.....	4,340	4,720	6,420	4,960	5,340	.....	9,075	5,870	.....	6,725	4,760
6	4,200	4,340	4,520	6,010	5,000	5,340	14,830	8,460	6,950	4,760	10,525	.....
7	4,160	4,460	.....	8,100	5,970	5,320	13,700	7,800	.....	4,740	7,600	5,000
8	4,160	4,520	5,930	9,875	.....	.....	13,470	7,860	8,175	5,320	.....	4,800
9	4,160	.....	8,150	9,325	4,860	5,710	14,100	7,860	7,450	4,840	.....	4,760
10	4,160	4,820	6,850	8,400	5,000	5,380	14,175	.....	6,625	5,340	5,360	4,840
11	4,120	4,560	5,810	.....	6,910	5,710	13,260	8,780	6,225	5,000	4,640	5,100
12	.....	4,580	5,300	6,750	6,550	5,140	.....	8,300	5,690	.....	4,640	5,870
13	4,160	4,560	5,340	10,240	6,700	5,040	11,300	7,600	5,140	4,780	4,640	.....
14	4,200	4,400	.....	12,440	6,600	4,980	10,650	7,100	.....	4,600	4,840	5,060
15	4,120	4,300	5,160	9,900	.....	.....	11,000	7,325	5,280	4,620	14,350	4,840
16	4,160	.....	4,920	7,975	6,275	5,140	11,620	7,300	4,860	4,760	.....	4,580
17	4,080	4,480	4,920	6,725	6,300	5,020	11,325	.....	4,660	4,540	7,200	4,600
18	4,080	4,460	5,080	.....	5,870	5,000	11,075	7,300	4,660	4,520	6,075	4,600
19	.....	4,440	5,000	5,730	5,850	5,980	.....	7,075	4,660	.....	5,140	4,640
20	4,160	4,400	5,080	5,830	5,550	5,000	11,125	6,930	4,700	4,680	4,880	.....
21	4,160	4,300	.....	5,320	5,450	4,960	11,830	6,930	.....	4,660	4,700	4,680
22	4,120	3,970	4,700	6,300	.....	.....	13,020	6,650	4,600	4,700	4,800	4,620
23	4,160	.....	5,080	6,480	4,980	4,820	14,680	6,675	4,660	4,300	.....	4,680
24	4,160	4,080	5,670	5,380	5,200	4,800	15,760	.....	4,700	4,460	5,550	4,640
25	4,080	4,740	.....	.....	5,060	4,820	15,310	6,460	4,620	4,680	5,220	4,540
26	.....	5,000	5,670	5,475	5,160	4,800	.....	6,150	4,540	.....	5,000	4,500
27	4,200	.....	5,220	6,100	5,060	4,920	12,300	5,970	4,480	4,520	5,000	.....
28	4,160	5,575	.....	5,340	4,900	5,080	11,200	5,850	.....	4,480	4,860	4,620
29	4,340	4,900	5,475	5,240	.....	.....	10,675	5,120	4,700	4,440	4,900	4,600
30	4,260	.....	5,340	5,160	.....	6,500	12,930	4,940	4,740	4,500	.....	4,580
31	4,200	.....	5,450	5,160	.....	6,340	.....	.....	.....	4,560	4,940	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1885–86.												
1	4,640	.....	5,870	6,360	8,580	9,575	15,640	7,450	5,040	4,580	.....	4,480
2	4,480	5,950	5,710	10,850	8,440	7,975	27,800	.....	5,100	4,600	4,560	4,500
3	4,600	7,840	5,475	.....	7,500	7,575	29,400	6,870	4,920	4,500	4,580	4,440
4	.....	12,700	5,080	10,450	7,275	7,575	.....	6,870	4,820	.....	4,580	4,400
5	4,520	10,150	5,200	10,240	6,890	7,350	16,200	6,500	5,000	.....	4,640	.....
6	4,400	8,350	.....	24,600	6,320	6,950	13,925	6,525	.....	4,560	4,600	4,540
7	4,580	7,250	5,400	26,450	.....	.....	17,680	6,420	4,820	4,600	4,620	4,500
8	4,800	.....	4,800	15,610	5,810	6,675	.....	6,300	4,740	4,500	.....	4,320
9	4,640	8,440	4,800	9,225	5,650	6,300	16,520	.....	4,480	4,560	4,600	4,400
10	5,120	15,730	5,140	.....	5,710	6,340	14,740	8,400	4,580	4,440	4,620	4,300
11	.....	15,190	8,440	7,975	5,650	6,050	.....	8,025	4,540	.....	4,500	4,440
12	4,500	11,740	10,050	7,760	6,050	6,100	14,740	7,600	4,480	4,500	4,460	.....
13	4,540	9,525	.....	6,930	10,700	6,250	13,625	7,675	.....	4,500	4,480	4,640
14	4,720	8,300	8,400	6,950	.....	.....	13,170	7,125	4,800	4,480	4,440	4,320
15	4,720	.....	9,725	6,360	31,600	6,625	14,410	6,750	4,620	4,540	.....	4,340
16	4,800	6,975	9,600	6,625	28,000	6,725	15,820	.....	4,660	4,580	4,480	4,260
17	4,780	6,770	8,175	.....	22,700	6,625	16,200	7,625	5,160	4,560	4,560	4,240
18	.....	6,250	7,400	6,500	18,640	7,000	.....	8,500	5,020	.....	4,480	4,660
19	4,800	5,950	7,025	5,990	15,850	7,500	14,440	7,675	4,760	4,840	4,520	.....
20	4,640	5,910	.....	5,950	15,190	7,720	14,860	7,075	.....	4,560	4,480	4,600
21	4,620	6,400	6,250	5,730	.....	.....	14,950	6,525	4,720	4,540	4,460	4,540
22	4,780	.....	5,670	5,850	12,250	6,725	13,820	5,990	4,660	4,640	.....	4,540
23	7,175	5,770	5,810	5,950	10,970	9,000	12,900	.....	4,680	4,700	4,520	4,480
24	7,600	5,625	6,480	.....	9,925	8,500	11,710	5,910	4,560	4,520	4,580	4,360
25	.....	5,670	.....	6,625	9,150	8,125	.....	5,930	4,520	.....	4,400	4,600
26	5,850	.....	6,360	5,360	8,900	8,025	9,800	5,280	4,800	4,520	4,420	.....
27	5,000	6,300	.....	5,600	8,440	8,075	8,810	5,380	.....	4,500	4,200	4,600
28	4,780	6,050	5,020	5,890	.....	.....	8,200	5,990	5,020	4,560	4,340	4,560
29	4,900	.....	5,220	6,150	.....	9,775	7,840	6,175	4,600	4,520	.....	4,600
30	4,820	5,910	5,340	7,175	.....	10,575	7,600	.....	4,580	4,540	4,320	4,620
31	5,140	.....	5,240	.....	.....	12,775	.....	5,770	.....	4,600	4,480	.....
1886–87.												
1	5,020	5,575	6,300	5,400	17,040	6,500	8,660	.....	8,325	6,175	7,575	6,500
2	6,380	6,950	7,275	.....	14,030	6,175	8,400	20,780	8,750	4,820	7,375	6,010
3	.....	5,910	7,625	7,325	11,770	6,440	.....	17,250	9,525	.....	7,200	5,990
4	4,640	5,300	5,240	6,250	9,700	5,870	8,075	16,025	9,650	.....	6,625	.....
5	4,580	4,800	.....	5,850	9,650	6,050	9,875	15,550	.....	5,160	6,320	5,450
6	4,420	6,050	4,780	5,600	.....	.....	11,425	16,450	9,350	4,540	5,425	5,200
7	4,120	.....	4,840	5,400	7,800	5,600	.....	14,250	8,350	4,840	.....	5,060
8	4,520	5,080	4,640	5,160	7,550	5,850	11,400	.....	7,375	5,625	6,600	4,980
9	4,500	6,725	4,920	.....	7,325	5,930	11,175	12,650	6,950	5,060	5,950	5,300
10	.....	6,050	4,780	5,200	7,150	5,710	.....	13,200	6,420	.....	5,400	4,940
11	4,620	5,240	5,000	5,080	7,150	5,930	18,250	12,300	5,790	5,040	5,300	.....
12	4,680	4,840	.....	4,660	7,880	6,340	27,350	11,950	.....	5,100	5,240	5,160
13	4,660	4,620	5,220	4,820	.....	.....	30,100	9,850	5,500	5,450	5,360	4,800
14	4,480	.....	5,240	4,920	7,575	6,625	26,550	8,660	4,960	5,240	.....	4,980
15	4,260	4,880	4,980	4,820	6,810	6,500	21,650	.....	4,800	4,900	5,040	5,400
16	4,000	4,400	5,340	.....	6,625	6,750	18,640	7,250	4,500	4,440	4,640	5,220
17	.....	4,360	4,900	4,900	7,150	6,480	.....	7,650	4,500	.....	4,740	4,900
18	4,560	4,500	4,720	7,025	7,250	6,810	16,695	7,575	4,340	4,680	4,780	.....
19	4,480	7,075	.....	5,140	8,200	6,810	15,250	7,200	.....	4,320	9,350	4,840
20	4,460	13,750	5,550	4,740	.....	.....	14,125	7,025	4,800	4,280	9,650	4,580
21	4,140	.....	5,300	4,580	9,925	7,200	13,550	6,890	4,460	4,420	.....	4,500
22	4,100	7,820	5,320	4,820	9,475	8,900	14,125	.....	4,480	4,460	6,930	4,600
23	4,160	7,075	5,080	.....	8,050	9,000	15,100	6,225	4,500	4,440	8,100	4,780
24	.....	6,950	5,140	5,160	7,600	8,400	.....	5,870	4,840	.....	10,150	4,780
25	4,160	.....	.....	7,840	8,150	8,400	18,900	5,650	18,640	15,310	13,700	.....
26	4,160	8,950	.....	10,360	7,600	8,125	19,830	5,475	.....	15,790	14,800	4,640
27	4,100	8,810	7,800	11,500	.....	.....	19,100	8,350	11,000	14,150	12,410	4,680
28	3,985	.....	8,100	11,200	7,550	8,420	17,750	8,750	8,440	11,125	.....	4,480
29	4,100	6,575	7,325	10,525	.....	9,700	16,980	.....	6,675	9,150	8,025	4,400
30	4,060	6,360	6,200	.....	.....	9,850	.....	9,975	6,600	8,840	6,850	4,320
31	.....	.....	5,750	17,750	.....	9,075	.....	9,575	.....	.....	6,650	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1887–88.												
1	3,420	4,340	6,460		5,410	8,975		30,250	10,250		5,010	4,930
2		4,280	5,200	8,450	5,350	8,775	19,200	28,200	10,150	5,960	5,010	
3	4,520	4,200	5,200	9,100	5,330	8,150	20,000	23,510		5,110	5,010	5,210
4	4,400	4,280		9,200	5,610		18,650	18,450	8,675		4,970	4,930
5	4,900	4,400	5,320	9,350		10,250		16,900	7,840	5,370		4,930
6	4,820		5,525	8,700	5,510	6,800	19,200		7,540	5,130	4,950	4,930
7	5,340	4,300	5,750	8,025	5,530	6,610	24,000	14,850	7,200	5,010	4,950	4,930
8	4,620	4,300	5,750		5,490	6,750		15,250	6,950		4,950	4,790
9		4,300	5,240	7,470	5,775	6,400	21,700	15,500	7,350	5,350	4,950	
10	4,560	4,400	4,960	6,690	5,775	6,590	19,300	16,750		5,170	4,970	5,150
11	4,520	4,400		7,000	5,610		17,550	18,700	6,570	4,950	5,050	5,490
12	4,400	4,400	7,700	7,260		6,590	17,300	19,050	6,200	4,750		5,210
13	4,500		10,760	6,500	5,725	6,020	17,250		6,200	4,650	5,170	5,010
14	4,320	4,820	8,900	5,940	5,510	5,900	17,200	28,550	5,940	9,375	5,210	5,150
15	4,400	4,560	7,950		5,590	5,850		25,200	5,850		5,190	5,190
16		5,425	7,075	6,650	6,100	6,610	15,500	20,850	5,850	5,210	5,330	
17	4,400	7,075	6,775	5,940	5,470	6,710	15,500	18,000		4,950	5,250	4,930
18	4,320	6,750		5,430	5,210		16,300	15,450	6,140	4,910	4,950	5,190
19	4,300	5,710	5,830	6,200		7,100	17,050	13,500	5,675	4,910		6,590
20	4,320		5,300	5,750	5,610	6,500	17,100		5,250	4,950	5,110	9,600
21	4,320	5,930	5,525	6,160	6,180	6,950	18,050	12,050	5,250	5,010	4,990	8,900
22	4,300	6,480	5,400		8,625	10,950		10,825	5,170		5,050	13,230
23		5,850	4,800	6,300	10,125	14,250	16,850	10,700	5,170	5,150	5,190	
24	4,820		4,960	5,700	11,500	17,000	17,100	10,325		5,050	5,250	13,650
25	4,540	5,425		5,700	11,875		16,850	10,300	5,390	4,990	5,190	10,750
26	4,500	5,300		5,960		14,000	15,200	10,175	5,900	4,950		10,825
27	4,400		3,530	5,980	10,775	12,750	15,150		7,840	4,990	5,230	13,650
28	4,400	5,525	4,640	6,375	10,950	13,100	16,100	12,410	6,525	4,950	4,990	16,100
29	4,360	6,750	5,000		10,325	14,700		9,400	6,550		4,990	12,050
30		8,275	6,030	6,350		16,600	25,300	11,160	6,060	5,190	4,990	
31	4,480		5,625	5,330		21,400		11,040		4,990	4,930	
1888–89.												
1	8,775	10,550	17,500	10,200	8,000	5,250	8,725	11,040	5,900	5,150	6,800	
2	8,875	9,800		10,125	7,720	5,250	9,125	9,775		5,170	6,525	5,010
3	11,500	9,425	12,960	9,300			9,775	8,775	7,000	5,010	9,900	4,950
4	11,560		12,050	9,000	7,520	5,700		8,300	9,725			4,970
5	10,150	9,400	11,250	8,525	7,080	6,120	10,400		7,975	5,470	8,325	4,910
6	8,875	9,000	10,700		7,200	8,700	11,100	7,560	7,560	5,470	8,000	4,950
7		8,575	10,375	9,400	7,760	14,850		7,320	7,320		7,560	7,040
8	13,700	8,275	9,400	11,800	7,350	16,400	10,000	6,925	6,650	5,190	7,100	
9	15,250	8,375		13,850	7,290	14,200	9,725	6,750		5,090	6,710	5,150
10	12,725	9,175	9,025	13,600			9,725	6,690	7,290	5,010	6,450	4,810
11	10,775		8,975	17,000	7,560	9,875	10,025	6,160	7,560	4,950		4,750
12	9,675	14,700	9,300	15,200	6,570	8,950	5,330		8,675	5,010	6,220	4,850
13	9,325	13,200	8,875		6,710	8,775	10,050	6,450	8,150	4,850	5,530	4,830
14		11,250	7,140	10,925	7,540	9,100		5,980	7,410		5,410	4,810
15	9,900	10,025	7,260	9,850	6,825	9,300	9,775	6,060	6,825	5,010	5,430	
16	8,925	11,250		9,000	6,240	9,325	8,875	6,325		4,950	5,750	5,010
17	9,075	13,440	8,025	9,000			8,525	6,160	6,240	4,850	6,080	5,050
18	9,825		17,700	8,125	7,000	9,100	8,825	6,040	6,160	4,930		5,110
19	10,490	10,900	25,800	15,200	7,080	9,350	9,025		6,160	4,810	5,610	6,300
20	10,400	11,250	22,500		7,040	10,550	9,025	5,510	6,100	4,810	5,450	7,540
21		12,210	16,550	9,725	6,875	10,750		5,630	6,000		5,410	9,150
22	10,025	11,100	12,590	7,800	6,900	10,350	10,900	7,860	5,250	9,400	5,430	
23	9,175	9,500		8,200	6,475	10,225	10,150	10,550		7,260	5,270	7,000
24	8,975	8,650	11,275	8,700			8,950	9,025	5,310	6,300	5,050	6,875
25	10,400			8,925	6,300	10,700	7,900	7,580	4,970	6,040		6,220
26	11,650	9,950	10,640	8,775	6,350	11,160	7,290		4,990	5,150	5,230	6,060
27	10,825	9,900	10,610		5,310	10,350	8,275	6,750	5,110	5,010	5,150	5,900
28		17,100	12,300	8,975	5,390	9,675		6,325	5,150		5,050	5,940
29	11,925		13,950	8,150		9,550	13,500	6,750	4,850	5,650	4,850	
30	13,500	20,500		8,100		9,400	12,900	6,650		5,350	5,010	6,020
31	11,975		11,250	7,840				6,240		5,200	5,210	

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1889–90.												
1	5,410	7,580	.....	7,600	6,260	15,750	11,425	10,225	.....	5,090	5,110	.....
2	5,270	7,200	11,900	7,860	.....	.....	10,950	10,670	9,250	5,150	4,930	7,700
3	7,800	.....	10,460	8,750	6,710	13,230	.....	10,610	8,400	5,250	.....	6,730
4	7,350	8,350	9,750	9,450	6,160	11,100	11,475	.....	8,025	.....	4,650	6,200
5	6,550	13,410	8,350	.....	6,900	10,375	14,700	10,275	7,700	.....	4,530	5,800
6	.....	10,700	7,680	8,375	7,950	8,900	.....	14,700	8,850	.....	4,470	5,610
7	6,350	9,125	7,950	8,100	8,425	6,590	16,800	16,600	10,950	5,700	4,470	.....
8	9,325	8,125	.....	8,475	7,950	7,680	16,250	18,500	.....	5,390	4,390	5,490
9	11,475	7,660	8,500	7,950	.....	.....	16,400	14,900	9,850	5,090	4,310	5,190
10	9,325	.....	15,650	6,750	11,950	7,900	16,700	12,300	8,800	5,150	.....	5,350
11	7,860	6,950	16,700	6,750	10,750	7,840	17,000	.....	8,075	5,150	4,930	5,450
12	7,350	6,875	15,000	.....	9,250	8,150	16,500	12,440	7,230	5,090	4,890	5,800
13	.....	6,630	14,600	6,710	8,650	9,650	.....	11,650	7,780	.....	4,850	6,350
14	7,260	6,800	12,350	6,925	7,900	14,200	14,900	10,400	9,225	5,150	4,810	.....
15	7,290	7,120	.....	7,600	8,525	16,300	16,600	10,400	.....	5,010	4,890	10,400
16	7,260	7,080	8,350	7,975	.....	.....	18,600	12,470	8,850	5,070	4,850	10,950
17	6,610	.....	8,900	9,850	9,500	13,600	16,600	11,900	8,150	4,890	.....	10,950
18	6,400	6,550	9,125	9,075	9,125	12,500	14,400	.....	7,680	5,010	4,810	13,440
19	6,300	6,080	9,575	.....	8,150	11,590	13,080	9,925	7,320	4,850	4,810	17,400
20	.....	6,570	13,380	8,250	7,160	10,300	.....	9,200	6,670	.....	4,890	14,400
21	6,300	8,525	14,100	8,625	7,290	10,175	11,130	10,200	6,650	5,050	4,970	.....
22	6,060	9,775	.....	8,975	7,120	10,800	10,875	13,650	.....	4,970	4,930	9,400
23	5,725	10,490	11,650	8,600	.....	.....	10,580	10,825	6,280	4,850	5,150	8,075
24	5,410	.....	10,800	7,410	6,750	18,050	10,640	9,400	6,000	4,890	.....	7,600
25	5,450	9,325	.....	7,100	7,040	16,500	11,375	.....	5,430	4,810	5,130	7,100
26	5,430	8,350	11,130	.....	7,925	14,500	11,875	7,860	5,570	4,950	5,410	6,590
27	.....	7,900	11,300	7,140	14,250	15,100	.....	7,740	5,610	.....	4,610	6,240
28	5,775	.....	9,875	7,290	15,750	15,200	12,270	13,900	5,290	6,350	4,650	.....
29	7,000	16,700	.....	6,325	.....	14,300	11,300	17,700	.....	6,060	10,460	6,750
30	8,575	16,750	6,375	6,710	.....	.....	10,980	14,250	5,330	5,650	8,025	6,375
31	8,400	.....	10,640	6,590	.....	11,975	.....	11,875	.....	5,150	.....	.....
1890–91.												
1	6,240	11,550	7,080	5,650	.....	.....	17,900	9,675	6,200	4,890	6,200	4,850
2	6,200	.....	6,280	5,550	10,750	14,850	.....	8,600	5,750	4,850	.....	5,690
3	6,060	9,475	5,570	5,370	10,950	12,825	16,400	.....	6,020	4,750	5,010	4,590
4	6,000	9,525	5,310	.....	11,160	10,950	16,400	8,900	6,220	.....	4,750	4,550
5	.....	8,925	5,350	6,200	11,250	9,775	.....	8,900	6,950	.....	4,710	4,430
6	6,950	8,925	5,370	5,675	9,900	9,925	15,000	8,475	7,740	5,050	4,810	.....
7	6,800	8,100	.....	5,550	9,450	9,925	14,500	7,925	.....	4,810	4,770	.....
8	6,425	8,025	5,940	5,550	.....	.....	13,600	7,660	6,350	4,910	4,810	4,690
9	7,200	.....	5,450	5,550	8,900	9,600	12,990	7,160	5,850	4,850	.....	4,650
10	7,600	7,600	5,450	5,450	8,250	11,190	12,725	.....	5,450	5,010	4,690	4,690
11	7,440	7,560	5,310	.....	8,725	18,300	12,990	6,550	4,970	4,950	4,590	4,650
12	.....	7,600	5,450	6,825	9,400	20,450	.....	7,100	4,950	.....	4,510	4,690
13	6,690	7,640	5,900	8,400	8,575	20,000	22,050	7,600	4,970	4,850	4,510	.....
14	6,240	7,380	.....	11,650	8,250	22,800	24,450	7,440	.....	4,810	4,350	4,650
15	6,300	7,200	5,650	11,450	.....	.....	22,550	6,950	5,150	4,770	4,350	4,690
16	6,375	.....	5,250	11,100	7,540	21,900	23,300	6,425	5,050	4,690	.....	4,490
17	7,540	7,260	5,350	9,875	8,150	17,700	22,300	.....	4,870	4,690	4,610	4,490
18	13,750	8,025	5,410	.....	10,275	15,500	19,700	9,900	4,810	4,730	4,510	4,350
19	.....	11,250	6,300	8,850	11,160	14,600	.....	8,525	4,750	.....	4,450	4,510
20	18,850	12,025	6,220	8,200	11,500	13,350	20,800	7,600	5,530	4,890	4,450	.....
21	23,700	10,400	.....	8,000	10,490	12,620	20,800	6,975	.....	5,700	4,450	4,490
22	21,300	9,075	6,100	7,950	.....	.....	17,900	6,570	5,590	4,990	4,390	4,510
23	16,900	.....	5,550	11,375	10,025	21,500	15,300	6,950	5,290	4,770	.....	4,330
24	13,900	7,700	5,725	14,000	10,025	29,900	15,650	.....	6,650	4,730	5,450	4,390
25	13,850	7,380	.....	.....	10,400	32,000	16,000	6,550	6,670	4,690	4,690	4,270
26	.....	7,410	6,140	15,000	13,950	29,900	.....	6,375	6,000	.....	4,550	4,205
27	13,950	.....	5,550	12,900	21,000	24,300	10,750	6,220	5,900	5,050	4,410	.....
28	12,590	7,000	.....	11,770	20,850	20,250	10,150	5,510	.....	4,810	4,490	4,175
29	11,070	6,750	6,000	10,520	.....	.....	9,900	5,350	5,290	4,850	4,510	4,250
30	10,850	.....	6,000	9,975	.....	18,400	9,900	5,410	5,190	4,750	.....	4,250
31	11,925	.....	5,410	9,700	.....	22,900	.....	.....	.....	4,810	5,450	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1891–92.												
1	4,290	.....	4,950	10,640	5,900	7,860	8,650	.....	8,850	8,525	4,610	7,200
2	4,205	4,350	4,690	8,025	5,900	4,850	8,500	5,650	8,775	7,740	4,510	7,000
3	4,235	4,175	4,610	.....	5,650	5,250	.....	5.050	7,600	.....	4,510	6,080
4	.....	3.940	4,510	18,300	5,700	4,790	11,300	6,240	7,200	.....	4,450	.....
5	4,175	3,980	4,550	12,960	6,100	4,745	13,500	7.470	.....	11,590	4,390	.....
6	4,205	3,850	.....	9,400	5,900	.....	13,800	8,900	6,500	10,350	4,330	5,350
7	4,145	3,980	6,610	6,630	.....	4,810	.....	7,540	6,200	8,575	.....	4,770
8	4,100	.....	6,000	6,425	5,850	5,010	12,775	.....	6,220	7,040	4,510	4,790
9	4,060	4,060	5,775	6,160	5,590	5,725	10,150	6,200	6,200	6,650	4,350	4,790
10	3,980	4,060	4,690	.....	5,150	6,750	.....	5,550	5,700	.....	4,330	4,790
11	.....	3,940	4,510	6,350	5,090	9,400	8,275	5,350	5,900	5,920	4,310	.....
12	4,175	4,020	4,510	5,410	5,010	9,225	7,800	5,210	.....	5,570	4,350	4,650
13	4,220	3,940	.....	5,650	5,350	.....	7,320	5,960	5,550	4,850	5,050	4,450
14	4,205	3,900	4,450	7,160	.....	8,650	6,590	7,440	4,670	4,790	.....	4,450
15	4,130	.....	4,510	17,100	4,990	6,750	6,550	.....	4,750	4,750	6,140	4,650
16	4,205	4,100	4,510	18,900	5,050	6,950	6,060	7,800	4,670	4,710	6,200	7,925
17	3,980	4,100	4,450	.....	4,930	6,425	.....	8,975	4,610	.....	5,450	7,000
18	.....	4,060	4,510	9,775	4,910	6,140	6,040	8,775	4,490	4,950	4,350	.....
19	4,350	4,390	4,350	9,650	4,910	6,000	5,875	7,600	.....	4,770	4,410	5,700
20	4,100	4,690	.....	10,275	4,890	.....	5,250	6,730	5,050	4,350	4,390	4,550
21	4,235	4,650	4,510	11,450	.....	5,725	5,150	7,580	4,610	4,550	.....	4,630
22	4,175	.....	4,470	9,275	4,930	5,250	5,010	.....	4,490	4,650	4,690	4,550
23	4,270	4,550	4,510	8,500	4,950	5,410	5,570	17,850	4,590	4,450	4,490	4,650
24	4,350	4,650	4,510	.....	4,850	5,700	.....	20,550	4,610	.....	4,450	4,570
25	.....	4,510	.....	6,800	5,170	7,100	6,550	19,750	4,570	4,570	4,470	.....
26	4,390	.....	.....	7,200	5,650	7,700	5,980	15,500	.....	4,510	4,430	4,630
27	4,430	5,650	.....	6,040	5,610	.....	5,775	12,900	8,925	4,510	6,650	4,235
28	4,350	5,150	8,650	6,040	.....	9,275	5,490	11,500	8,700	4,490	.....	4,350
29	4,350	.....	7,350	5,750	6,160	8,925	5,490	.....	10,100	4,490	15,300	4,530
30	4,270	5,470	7,000	5,960	.....	8,825	5,490	9,975	10,800	4,390	11,620	4,470
31	4,205	.....	13,050	.....	.....	8,650	.....	8,825	.....	.....	8,975	.....
1892–93.												
1	4,490	4,060	4,850	.....	5,500	6,400	11,340	13,950	9,075	6,150	5,660	8,325
2	.....	4,130	4,650	5,950	5,300	6,275	.....	15,150	8,790	.....	5,620	6,750
3	4,490	4,100	4,550	8,600	5,560	6,050	14,670	16,050	8,690	.....	5,400	.....
4	4,430	4,080	.....	8,660	6,150	6,275	14,190	19,100	.....	.....	4,810	.....
5	4,350	4,080	4,730	7,675	.....	.....	13,620	35,500	8,060	6,275	4,810	7,250
6	4,250	.....	4,490	6,275	6,150	6,600	.....	36,200	7,625	6,200	.....	5,950
7	4,160	4,430	4,490	6,725	6,050	6,130	14,760	.....	7,800	6,050	4,850	4,690
8	4,190	4,205	4,530	.....	5,900	6,150	13,800	23,900	7,750	6,070	4,910	5,500
9	.....	4,175	4,850	6,400	6,560	6,090	.....	20,000	7,625	.....	5,480	4,610
10	4,350	6,200	5,650	6,175	6,850	6,275	16,200	17,500	7,200	6,350	4,390	.....
11	4,250	5,900	.....	6,275	9,075	6,850	17,500	16,450	.....	6,090	5,225	5,990
12	4,020	5,900	5,350	5,900	.....	.....	16,200	17,000	7,400	6,090	4,100	5,175
13	3,980	.....	4,730	5,700	11,750	9,625	17,000	17,050	6,560	5,850	.....	6,275
14	3,980	5,530	4,790	6,200	9,625	12,650	17,850	.....	7,175	5,725	6,050	5,175
15	4,205	5,310	4,650	.....	8,950	18,050	18,200	18,300	6,750	5,660	4,970	6,275
16	.....	4,790	4,550	6,275	8,400	20,350	.....	16,700	6,500	.....	5,400	5,050
17	4,100	11,925	4,530	5,950	8,850	19,650	17,500	17,800	6,600	5,950	4,310	.....
18	4,235	17,300	.....	5,600	8,850	17,500	15,990	26,650	.....	5,660	5,250	6,500
19	4,250	13,200	4,650	5,500	.....	.....	14,250	26,800	7,125	5,420	4,175	5,900
20	4,250	.....	4,456	5,700	8,100	12,830	13,800	22,100	6,650	5,380	.....	5,850
21	3,650	10,750	4,390	5,825	7,340	11,800	13,440	.....	6,560	5,400	5,050	6,050
22	4,040	8,975	4,350	.....	6,600	10,925	14,700	15,450	6,460	5,175	4,550	6,010
23	.....	7,470	4,330	6,090	6,500	10,650	.....	14,010	6,130	.....	6,150	5,750
24	4,175	.....	4,250	5,400	6,500	9,675	14,700	12,650	6,400	5,580	4,710	.....
25	4,080	6,300	.....	5,750	6,440	9,950	14,190	12,310	.....	5,150	6,275	6,110
26	4,100	5,550	.....	5,300	.....	.....	14,250	11,625	7,150	5,125	4,830	5,700
27	4,040	.....	4,350	4,990	6,420	14,700	13,500	10,350	7,050	5,050	.....	6,030
28	4,040	5,800	3,960	6,010	7,050	14,010	13,710	.....	6,560	5,075	7,010	4,950
29	3,700	4,630	3,800	.....	.....	13,440	13,200	9,875	6,520	5,010	5,750	5,600
30	.....	4,790	3,800	6,150	.....	12,160	.....	9,200	6,275	.....	7,175	4,810
31	4,080	.....	3,650	5,700	.....	11,600	.....	9,075	.....	5,750	8,750	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1893–94.												
1	.....	8,400	9,050	7,625	6,725	6,725	.....	9,825	12,890	.....	5,600	4,870
2	5,875	8,000	8,200	7,625	6,675	6,225	9,450	8,910	11,430	6,375	5,175	.....
3	5,640	7,625	.....	7,340	6,600	6,200	9,625	9,000	.....	6,560	5,300	.....
4	5,540	7,360	7,850	7,150	.....	.....	9,700	9,700	12,830	.....	5,620	5,100
5	5,620	.....	7,050	7,175	6,850	6,360	9,400	8,89	12,475	6,890	.....	4,490
6	5,050	7,800	6,850	7,175	6,675	8,300	9,700	.....	11,000	6,950	5,750	4,790
7	4,950	7,575	6,970	.....	6,650	11,950	9,450	8,600	9,825	6,850	5,680	4,790
8	.....	6,990	7,525	8,000	6,150	18,800	.....	8,870	9,125	.....	5,640	4,850
9	5,340	6,400	7,525	7,750	6,350	20,400	9,100	8,950	8,890	7,050	5,360	.....
10	5,340	6,420	.....	7,300	5,900	13,025	9,200	8,160	.....	6,825	5,100	5,100
11	5,275	6,275	7,420	7,175	.....	.....	9,200	8,020	8,100	6,350	5,275	4,550
12	5,275	.....	7,275	6,910	6,930	16,050	9,450	7,500	7,360	5,950	.....	4,530
13	5,250	6,420	7,200	7,575	7,010	15,960	9,775	.....	7,250	5,950	5,560	4,950
14	5,275	6,540	6,970	.....	6,090	16,140	10,125	7,550	7,050	6,030	5,620	6,890
15	.....	6,275	6,110	7,300	6,225	15,180	.....	7,250	7,030	.....	5,250	6,150
16	7,440	6,130	5,925	7,010	6,130	13,650	10,625	6,350	6,650	6,150	5,175	.....
17	7,200	6,275	.....	7,225	6,400	12,710	10,800	6,500	.....	6,150	4,890	6,825
18	6,890	6,090	7,300	6,275	.....	.....	11,125	6,775	6,890	6,350	5,400	5,910
19	6,850	.....	6,850	6,275	7,675	11,860	.....	6,850	6,460	5,900	.....	5,600
20	6,725	6,225	7,125	6,600	7,575	13,200	10,500	.....	5,825	5,580	5,680	6,600
21	6,600	6,325	6,990	.....	7,175	12,450	10,750	7,380	5,900	5,700	5,175	7,300
22	.....	6,300	7,050	6,650	7,175	14,850	.....	7,875	7,250	.....	5,100	7,925
23	6,800	6,420	6,950	6,650	7,225	13,500	17,100	7,750	6,970	5,900	4,510	.....
24	6,300	6,560	.....	6,700	8,250	14,100	16,020	7,500	.....	5,520	4,510	7,200
25	7,500	6,850	.....	6,800	.....	.....	15,000	8,000	6,970	6,150	4,390	6,725
26	11,400	.....	7,975	7,050	7,100	12,310	13,950	10,500	6,500	5,750	.....	5,150
27	9,050	6,950	8,660	6,850	6,950	12,250	12,475	.....	6,090	5,800	5,100	5,600
28	8,250	6,600	9,550	.....	6,650	11,125	11,550	9,875	6,050	5,440	4,490	5,600
29	.....	6,850	8,950	6,850	.....	10,350	.....	9,250	6,010	.....	4,650	6,275
30	11,175	.....	8,910	6,800	.....	10,025	10,100	11,550	6,175	5,460	4,650	.....
31	9,500	.....	.....	6,800	.....	9,525	.....	15,270	.....	5,900	4,450	.....
1894–95.												
1	6,560	5,990	6,650	5,850	6,050	5,300	9,200	10,290	7,340	6,500	6,225	.....
2	5,275	6,110	.....	5,850	6,200	5,300	8,450	10,350	.....	6,540	6,250	.....
3	5,460	6,520	6,850	5,825	.....	.....	8,450	9,900	6,725	6,110	6,350	6,150
4	4,970	.....	6,275	5,500	6,275	5,500	8,910	9,900	6,800	.....	.....	6,350
5	4,850	8,040	6,325	5,950	6,200	5,540	9,550	.....	6,350	7,010	6,400	6,150
6	5,700	8,000	6,070	.....	5,950	5,700	9,250	9,200	6,400	6,950	6,400	5,825
7	.....	7,700	5,925	5,950	5,825	5,825	.....	9,200	6,850	.....	5,990	6,150
8	5,825	7,675	6,050	5,600	5,825	5,600	9,925	8,950	6,890	7,075	5,500	.....
9	5,400	6,990	.....	5,660	6,725	6,275	10,875	8,750	.....	6,150	5,540	6,275
10	5,500	6,870	6,725	5,775	.....	.....	24,500	8,275	6,850	6,050	6,325	5,500
11	5,400	.....	6,150	6,225	5,900	6,650	34,600	8,000	6,400	6,600	.....	5,460
12	5,340	7,050	5,700	6,600	5,825	6,825	27,200	.....	6,150	6,990	6,500	5,175
13	6,725	6,890	6,090	.....	5,825	6,890	19,500	7,875	6,090	6,910	6,200	5,480
14	.....	6,050	6,275	6,600	5,580	7,050	.....	8,750	5,825	.....	6,275	5,750
15	6,600	6,050	7,400	6,600	5,500	8,200	39,900	9,125	6,200	6,990	5,600	.....
16	6,110	6,725	.....	6,725	5,825	9,200	66,700	8,540	.....	6,675	5,340	5,990
17	6,990	6,850	7,250	6,600	.....	.....	45,200	8,000	6,150	6,325	6,070	5,600
18	6,580	.....	7,400	6,650	5,825	8,950	27,600	7,875	6,050	6,150	.....	5,300
19	6,090	6,970	7,250	6,540	5,700	8,100	21,600	.....	5,825	6,130	6,400	5,125
20	6,275	6,930	7,100	.....	5,700	8,000	18,600	7,550	5,600	6,500	6,890	4,750
21	.....	6,890	7,100	6,890	5,500	7,675	.....	7,340	5,600	.....	6,500	5,700
22	6,650	6,890	7,010	6,350	5,500	7,700	15,420	6,800	5,950	6,600	6,460	.....
23	6,300	6,890	.....	6 200	6,050	7,875	14,760	6,800	.....	6,150	6,500	5,750
24	5,400	7,010	7,225	6,600	.....	.....	13,890	6,725	6,090	5 990	6 600	5,050
25	4,950	.....	.....	6,500	5,700	9,200	12,800	6,600	5,600	5,500	.....	4,770
26	5,560	7,050	7,050	6,600	5,500	9,250	11,890	.....	5,700	4,890	6,675	4,690
27	6,275	6,990	7,050	.....	5,500	10,675	11,800	6,850	5,950	5,875	5,825	4,690
28	.....	6,540	7,030	6,600	5,500	10,500	.....	6,500	6,050	.....	5,700	5,175
29	6,540	.....	6,175	6,150	.....	9,325	10,875	7,625	6,200	6,050	5,300	.....
30	5,440	7,010	.....	6,350	.....	9,700	10,625	8,350	.....	5,990	4,890	5,100
31	5,560	.....	6,540	6,200	.....	.....	.....	8,000	.....	6,050	5,500	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1895–96.												
1	4,810	7,050	.....	20,050	8,000	.....	19,700	9,325	7,625	5,420	5,250	4,810
2	5,500	9,450	10,950	20,550	.....	66,300	20,600	8,660	7,625	4,930	.....	4,250
3	6,600	.....	11,750	15,870	7,550	73,400	20,050	.....	7,600	4,890	5,075	4,115
4	7,300	9,700	14,550	12,250	7,300	34,400	17,500	8,450	7,625	.....	5,125	3,940
5	6,500	9,150	12,650	.....	7,100	20,400	.....	8,100	6,500	.....	4,910	4,610
6	.....	8,750	9,700	8,140	7,100	17,200	13,800	8,510	6,800	5,620	4,710	.....
7	6,650	8,450	8,600	8,200	13,025	16,600	13,350	8,325	.....	5,300	5,175	.....
8	5,950	8,100	.....	8,000	23,200	.....	12,950	8,080	6,930	5,400	5,250	7,300
9	5,620	9,150	9,250	7,650	.....	13,650	12,160	7,875	6,440	5,175	.....	7,800
10	5,050	.....	9,175	7,300	18,000	12,100	12,650	.....	6,150	5,380	4,550	7,625
11	5,100	8,950	8,950	7,440	14,550	12,450	13,230	7,800	7,875	6,130	5,275	7,175
12	5,600	10,440	8,690	.....	13,200	11,175	.....	7,500	8,080	.....	4,850	7,200
13	.....	9,250	8,750	7,750	11,520	9,725	15,900	7,420	7,500	7,925	5,320	.....
14	10,500	8,630	8,350	7,700	10,440	10,350	19,500	7,360	.....	5,225	5,250	7,010
15	12,950	8,850	.....	7,150	9,900	.....	23,900	7,300	7,550	5,075	5,100	6,110
16	12,040	11,980	8,630	7,175	.....	9,875	22,450	7,300	6,600	5,010	.....	6,600
17	9,950	.....	8,510	7,175	9,825	8,870	24,500	.....	6,600	4,870	5,380	6,600
18	8,510	13,560	7,775	7,440	8,140	9,900	26,000	7,500	6,600	4,810	5,300	6,150
19	8,140	13,075	7,750	.....	8,060	9,975	.....	6,850	6,520	.....	4,850	6,700
20	.....	12,100	8,250	7,675	8,000	13,890	.....	6,150	6,775	5,460	4,130	.....
21	8,200	11,675	8,375	7,400	8,325	20,500	19,900	6,400	.....	4,850	4,040	7,030
22	8,000	12,100	.....	7,125	8,325	.....	17,850	6,500	6,580	4,830	4,690	7,225
23	7,100	11,490	13,980	7,150	.....	20,350	15,750	6,890	6,600	5,500	.....	7,100
24	7,500	.....	16,500	7,050	7,850	17,700	14,190	.....	6,050	6,050	5,300	6,890
25	7,250	10,350	.....	7,550	8,040	15,060	12,800	6,990	5,520	6,440	5,200	6,375
26	7,300	10,875	11,370	.....	8,200	14,040	.....	6,150	5,460	.....	5,050	6,650
27	.....	13,075	11,250	8,200	8,100	15,900	10,950	6,050	5,775	6,050	4,610	.....
28	7,250	.....	13,920	7,500	8,100	17,500	10,350	6,400	.....	5,480	4,510	6,400
29	7,175	16,700	.....	7,400	8,450	.....	9,950	6,600	5,900	5,100	4,750	5,875
30	6,775	13,800	12,440	7,400	.....	16,850	9,750	6,950	5,600	5,050	.....	5,460
31	6,500	.....	11,920	7,175	.....	17,500	.....	.....	.....	.....	5,010	.....
1896–97.												
1	4,750	.....	8,000	7,450	7,950	7,300	15,900	12,300	11,250	9,000	.....	7,450
2	4,870	6,560	7,500	7,500	7,450	7,000	16,200	.....	10,650	10,350	11,250	7,750
3	5,850	6,350	6,700	.....	7,300	7,250	16,900	12,750	10,050	9,550	10,600	8,250
4	.....	6,150	6,275	7,950	7,150	8,000	.....	13,500	10,200	.....	9,600	9,950
5	6,560	5,875	7,500	8,150	7,200	9,300	16,900	14,200	11,400	.....	9,600	.....
6	5,175	6,725	.....	9,000	7,650	9,800	19,000	14,050	.....	8,750	10,100	.....
7	5,300	18,200	7,075	10,250	.....	.....	21,200	12,650	12,200	8,650	9,800	7,950
8	5,660	.....	6,400	10,450	8,900	11,850	22,700	11,850	11,250	8,800	.....	7,000
9	6,325	10,500	6,500	9,300	10,650	11,200	22,400	.....	10,550	9,650	9,300	7,000
10	6,560	9,000	7,320	.....	12,300	11,000	24,100	10,450	14,550	9,300	10,100	6,950
11	.....	8,200	8,040	9,200	11,950	12,000	.....	9,950	35,900	.....	10,250	7,600
12	6,275	7,625	7,550	9,000	10,650	14,100	21,300	10,450	34,900	8,500	9,100	.....
13	4,990	7,400	.....	8,200	9,450	15,000	18,300	11,200	.....	8,650	10,650	7,400
14	4,950	7,340	6,850	8,000	.....	.....	17,100	15,500	21,400	19,300	10,500	6,950
15	7,300	.....	6,600	7,550	8,800	12,750	16,700	26,200	19,700	34,000	.....	6,950
16	10,200	6,890	6,725	7,950	8,700	11,150	19,200	.....	18,100	41,100	10,650	6,400
17	8,480	7,460	4,490	.....	9,200	10,500	23,300	15,600	16,000	26,800	10,300	6,300
18	.....	6,400	4,190	8,050	8,550	10,250	.....	13,400	14,400	.....	10,300	7,550
19	7,300	6,275	6,150	8,050	9,050	10,500	.....	11,850	12,950	15,800	10,950	.....
20	6,400	6,275	.....	7,700	8,900	11,400	19,100	11,050	.....	13,850	10,650	7,100
21	6,520	6,030	5,950	7,400	.....	.....	18,000	10,450	12,400	12,600	10,600	6,900
22	6,500	.....	5,010	7,200	9,000	14,750	15,800	10,000	12,600	12,350	.....	6,700
23	10,500	6,350	4,850	8,650	8,800	15,100	14,600	.....	11,650	11,800	10,850	6,400
24	8,690	5,850	4,750	.....	8,200	17,700	14,000	9,250	10,500	12,200	8,700	6,100
25	.....	6,090	.....	8,550	8,400	19,200	.....	9,200	9,950	.....	9,450	7,450
26	8,000	.....	.....	7,700	8,200	18,500	16,900	9,450	9,750	14,700	11,000	.....
27	7,400	7,250	.....	7,100	7,450	16,700	18,200	10,600	.....	14,350	11,000	7,250
28	6,950	7,175	4,890	7,250	.....	.....	16,400	10,850	9,200	13,100	10,750	6,600
29	6,800	.....	4,550	7,000	.....	12,700	14,050	12,050	8,650	12,100	.....	6,500
30	6,725	8,950	4,410	8,450	.....	13,500	12,950	.....	8,650	12,800	10,350	6,450
31	6,325	.....	4,430	.....	.....	14,800	.....	.....	.....	13,450	8,550	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1897–98.												
1	6,300	5,700	8,200	7,450	8,200	9,200	18,700	.....	10,900	7,100	5,350	5,150
2	7,400	5,050	7,600	.....	8,750	8,900	16,300	14,100	9,750	6,900	4,750	5,000
3	.....	6,650	7,700	8,600	7,350	8,850	.....	13,100	8,900	.....	4,650	6,500
4	7,150	11,100	9,350	6,850	7,700	8,650	12,400	12,350	8,600	.....	4,400	.....
5	6,050	9,300	.....	6,800	7,450	8,650	12,300	12,400	.....	7,000	4,400	.....
6	6,000	8,150	9,200	7,100	.....	.....	11,850	12,650	9,050	6,450	5,000	5,150
7	5,850	.....	11,600	7,250	7,700	8,600	11,500	12,100	8,600	5,250	.....	4,650
8	5,650	7,700	10,300	7,400	7,800	8,450	11,250	.....	8,400	5,300	5,300	4,650
9	5,850	7,150	9,300	.....	7,700	8,900	10,400	11,400	8,100	6,100	4,750	4,950
10	.....	7,450	8,850	7,700	7,700	9,900	.....	10,450	8,200	.....	4,750	5,750
11	6,300	8,200	10,050	7,600	7,750	10,900	10,450	9,550	7,900	6,000	5,200	.....
12	6,000	8,950	.....	7,550	7,900	13,400	10,700	9,300	.....	5,450	5,600	5,350
13	5,900	10,050	10,450	7,600	.....	.....	10,950	9,700	7,600	5,000	6,000	4,850
14	5,950	.....	12,000	8,200	9,450	27,000	11,600	14,000	7,600	4,950	.....	4,450
15	6,050	9,000	15,600	8,750	9,600	33,000	11,850	.....	8,450	4,700	5,900	4,200
16	7,150	8,400	31,500	.....	9,450	31,500	13,300	10,750	10,000	5,400	5,200	4,000
17	.....	8,400	33,600	8,850	9,450	26,500	.....	10,750	8,600	.....	5,000	4,150
18	6,800	8,950	25,000	8,100	8,680	23,600	16,200	10,400	7,600	5,550	4,750	.....
19	5,850	9,450	.....	7,700	8,400	23,000	.....	9,750	.....	4,700	4,450	4,150
20	5,800	8,400	11,600	7,550	.....	.....	14,000	9,450	7,700	4,700	5,950	4,050
21	5,450	.....	10,750	8,050	8,450	25,800	13,550	8,700	8,750	4,550	.....	3,750
22	5,300	7,900	9,450	9,450	8,650	27,200	13,450	.....	9,050	5,150	6,450	3,700
23	6,550	7,850	9,900	.....	9,200	22,900	12,350	8,550	8,100	5,750	6,150	3,750
24	.....	7,850	9,100	10,600	9,450	20,200	.....	8,050	8,300	.....	5,550	4,300
25	6,050	.....	.....	10,350	9,750	19,900	23,900	8,600	7,900	5,550	6,350	.....
26	5,250	7,700	.....	9,700	9,750	18,000	27,500	11,500	.....	4,750	6,450	6,750
27	5,200	7,650	7,900	8,900	.....	.....	24,800	13,900	7,450	4,850	7,600	6,250
28	4,950	.....	8,100	8,800	10,400	16,300	20,000	15,700	6,850	4,800	.....	6,100
29	4,850	12,100	7,550	7,900	.....	16,700	17,900	.....	7,100	4,650	6,350	6,000
30	5,600	9,850	7,650	.....	.....	17,000	17,600	13,850	6,750	5,350	5,250	6,050
31	.....	.....	7,500	8,150	.....	18,200	.....	12,100	.....	.....	5,250	.....
1898–99.												
1	5,550	8,050	8,750	.....	8,450	9,050	17,400	23,200	7,200	6,700	6,300	5,100
2	.....	7,450	8,850	10,000	8,100	9,800	.....	23,800	6,900	.....	5,800	5,150
3	5,550	7,400	8,450	8,900	8,000	9,550	15,700	25,100	7,050	.....	5,750	.....
4	4,650	6,750	.....	9,300	8,600	9,400	15,200	23,800	.....	.....	5,950	.....
5	4,600	6,400	9,400	9,950	.....	.....	15,300	19,800	7,300	7,000	6,400	6,200
6	5,050	.....	15,000	12,350	8,600	11,550	16,100	16,200	6,750	6,300	.....	6,450
7	6,300	6,650	15,200	13,050	7,750	13,900	17,200	.....	6,550	6,300	6,900	5,950
8	6,200	6,400	13,100	.....	7,700	13,700	19,500	13,050	6,500	6,750	6,000	5,500
9	.....	6,300	10,300	11,300	7,200	12,900	.....	12,250	6,550	.....	5,700	6,200
10	6,550	6,350	8,400	11,200	7,350	11,950	29,300	11,500	7,300	7,000	5,700	.....
11	6,200	8,200	.....	11,050	8,100	11,050	29,300	10,900	.....	7,050	5,750	5,600
12	6,200	13,550	8,350	9,750	.....	.....	28,100	10,550	7,150	6,450	6,800	5,200
13	6,050	.....	7,200	9,500	8,000	15,000	25,900	10,000	6,450	6,950	.....	5,150
14	5,900	11,100	6,800	9,200	7,200	19,500	26,900	.....	6,100	6,900	6,900	5,050
15	6,850	9,900	6,700	.....	7,100	18,800	31,500	9,500	6,000	7,000	6,000	4,950
16	.....	9,000	7,000	10,100	7,200	17,600	.....	9,050	5,900	.....	5,700	4,800
17	6,450	8,350	6,450	11,050	7,200	17,400	38,800	8,850	6,800	7,000	5,700	.....
18	6,450	8,200	.....	12,900	7,950	15,200	35,000	8,500	.....	6,500	5,650	4,850
19	6,350	8,700	7,150	12,650	.....	.....	.....	8,350	7,200	6,300	6,100	4,400
20	6,450	.....	7,000	10,800	8,600	13,400	34,100	8,200	6,050	5,850	.....	4,450
21	6,600	18,000	6,800	9,750	8,600	13,150	34,200	.....	6,050	5,800	6,350	4,700
22	7,200	15,100	6,800	.....	9,250	12,550	30,400	8,950	6,400	6,450	5,450	5,450
23	.....	12,550	7,000	9,650	9,500	12,100	.....	8,350	6,000	.....	5,250	5,850
24	10,400	.....	8,300	9,450	9,400	12,150	29,400	8,600	6,800	6,900	5,200	.....
25	9,200	10,450	.....	9,750	9,400	12,100	31,600	8,100	.....	6,500	5,250	5,700
6	7,800	10,050	.....	10,200	.....	.....	31,200	7,800	6,800	6,350	5,250	5,400
7	8,300	.....	8,050	10,050	9,500	10,800	30,900	7,800	6,050	6,450	.....	5,250
8	12,350	6,200	7,400	9,800	9,400	11,350	30,900	.....	5,900	6,550	5,550	5,200
9	12,350	5,200	6,950	.....	.....	12,100	26,800	8,450	5,900	7,000	5,250	5,450
0	.....	7,700	6,650	9,650	.....	15,800	.....	7,650	5,950	.....	5,250	5,700
1	8,650	.....	6,750	8,500	.....	17,800	.....	7,300	.....	7,050	5,150	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years endng Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1899–1900.												
1	.....	5,300	5,700	5,850	7,100	14,300	.....	11,750	7,900	.....	4,450	4,100
2	6,000	6,000	5,950	5,050	6,950	32,900	13,450	12,750	7,550	6,100	4,550	.....
3	5,100	6,300	.....	5,150	6,700	34,600	14,500	12,150	.....	5,350	4,550	.....
4	5,000	6,750	5,700	4,300	.....	.....	16,600	13,600	8,200	.....	4,600	4,600
5	4,950	.....	5,450	4,250	6,950	24,800	17,900	17,200	9,200	5,250	.....	4,250
6	5,000	7,150	5,450	4,400	7,850	18,500	18,500	.....	9,050	5,100	4,400	4,200
7	5,300	6,300	5,450	.....	7,850	15,800	20,300	12,350	8,200	4,900	4,000	4,200
8	.....	6,200	5,550	4,850	7,800	13,050	.....	11,250	7,800	.....	4,050	4,150
9	5,350	6,300	6,100	5,450	8,150	12,500	22,300	10,900	7,600	5,250	4,200	.....
10	5,000	5,950	.....	4,700	10,050	12,650	19,400	10,800	.....	5,000	4,050	4,150
11	4,900	6,600	5,800	4,750	.....	.....	16,000	11,550	7,900	5,000	4,200	3,750
12	4,800	.....	5,200	4,750	10,000	11,850	14,350	10,300	6,650	4,900	.....	3,450
13	4,800	6,550	4,900	5,150	14,200	11,050	15,500	.....	6,100	4,400	4,600	3,450
14	4,450	6,100	5,350	.....	48,000	11,050	15,300	9,250	6,100	4,900	4,400	3,050
15	.....	5,750	7,300	5,350	47,500	10,050	.....	8,650	6,200	.....	4,000	3,100
16	4,900	5,550	6,800	4,900	37,500	11,300	15,300	9,650	6,350	4,950	4,550	.....
17	4,700	5,250	.....	4,900	25,700	14,150	17,000	11,600	.....	4,750	5,350	3,900
18	4,700	5,100	6,900	4,800	.....	.....	19,000	9,800	6,300	4,550	6,200	3,900
19	4,800	.....	5,800	4,800	13,550	13,900	.....	9,350	6,000	4,600	.....	4,850
20	5,100	5,650	5,800	5,050	12,750	16,400	33,200	.....	5,450	4,600	6,150	4,250
21	4,750	5,800	6,100	.....	11,500	20,900	36,100	19,500	5,450	4,750	4,900	4,250
22	.....	5,450	6,550	7,950	11,250	19,800	.....	16,200	5,500	.....	4,850	4,200
23	4,900	5,450	5,800	9,150	18,200	17,200	27,700	12,950	5,700	4,700	4,500	.....
24	4,350	5,700	.....	8,950	18,500	15,050	25,300	11,250	.....	4,300	4,500	4,300
25	4,350	6,450	.....	8,300	.....	.....	23,800	10,300	6,100	4,300	4,400	4,450
26	4,750	.....	6,800	7,800	21,400	12,700	21,000	9,500	5,450	4,500	.....	4,450
27	4,800	5,850	6,700	8,350	20,100	12,350	17,200	.....	5,200	4,700	4,400	4,450
28	4,800	5,700	5,950	.....	17,200	12,250	14,850	8,850	4,700	5,050	4,050	4,900
29	.....	5,550	5,800	7,450	.....	12,550	.....	8,450	5,000	.....	4,050	4,950
30	4,900	.....	6,150	7,200	.....	12,300	12,000	.....	5,300	5,000	3,950	.....
31	4,850	.....	.....	7,100	.....	12,750	.....	8,200	.....	4,500	4,000	.....
1900–1901.												
1	4,800	5,000	10,100	7,200	5,500	4,700	13,200	16,100	18,600	6,250	6,750	.....
2	4,750	4,900	.....	7,000	6,300	5,000	11,800	15,100	.....	6,100	6,550	.....
3	4,400	5,250	8,900	7,100	.....	.....	12,200	15,100	14,800	5,500	6,550	6,700
4	4,450	.....	8,450	6,450	5,800	5,050	18,700	14,400	13,500	.....	.....	6,700
5	4,400	5,300	11,350	5,900	5,300	4,850	32,000	.....	12,600	3,450	6,800	6,500
6	4,850	4,600	17,200	.....	5,300	5,250	32,500	12,000	11,400	3,400	5,650	6,500
7	.....	4,600	15,200	6,700	5,300	5,050	.....	11,200	10,400	.....	5,700	6,300
8	4,900	4,550	12,250	6,100	5,000	5,050	66,400	10,550	9,800	6,000	6,450	.....
9	4,700	5,000	.....	5,500	5,100	5,450	63,200	9,700	.....	6,000	12,050	6,100
10	4,800	11,400	8,500	5,650	.....	.....	47,500	9,700	10,900	5,900	9,300	5,500
11	5,200	.....	7,900	6,100	5,400	6,450	36,100	10,150	9,750	5,900	.....	5,300
12	6,300	9,800	8,000	6,450	4,800	12,650	30,300	.....	8,700	.....	8,300	4,650
13	6,750	8,100	7,800	.....	4,900	12,650	21,500	15,200	8,350	6,750	7,400	4,650
14	.....	7,700	7,700	6,550	5,000	10,700	.....	14,350	8,000	.....	7,100	5,750
15	6,650	7,250	7,150	5,700	4,800	9,300	20,000	12,900	7,250	6,750	7,000	.....
16	6,750	7,000	.....	5,800	5,150	8,300	19,100	11,300	.....	5,700	6,750	6,000
17	5,550	6,650	7,300	6,100	.....	.....	17,400	10,250	7,550	5,350	6,400	5,350
18	6,050	.....	6,550	6,000	5,350	8,300	16,000	9,350	7,150	.....	.....	5,900
19	6,100	6,750	6,200	6,100	5,000	7,450	.....	.....	6,850	5,550	7,100	.....
20	5,700	6,300	5,950	.....	5,050	7,500	14,500	18,100	6,000	6,550	6,300	6,400
21	.....	6,050	6,250	6,650	5,050	7,650	.....	28,700	6,300	.....	6,200	6,450
22	5,800	7,900	6,500	5,700	5,000	12,950	15,200	26,200	.....	6,000	5,850	.....
23	5,200	8,850	.....	6,000	4,700	14,400	21,800	20,800	.....	5,550	6,300	6,500
24	5,000	7,900	5,000	5,900	.....	.....	25,700	17,300	6,750	5,350	6,450	5,300
25	5,000	.....	.....	5,950	5,150	13,200	26,600	16,100	6,300	5,350	.....	5,150
26	5,000	8,150	8,450	6,100	4,700	13,700	30,600	.....	6,300	5,750	7,450	5,300
27	5,450	13,500	8,750	.....	4,750	21,600	28,700	17,000	12,500	5,800	7,100	5,250
28	.....	15,700	8,000	6,250	4,750	25,600	.....	17,400	6,100	.....	7,000	5,500
29	5,700	.....	6,750	5,800	.....	25,100	18,800	22,700	5,700	6,000	6,800	.....
30	5,000	11,200	.....	5,450	.....	19,000	16,200	.....	.....	5,700	6,500	5,550
31	4,950	.....	7,350	5,600	.....	.....	.....	21,400	.....	5,850	6,450	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901–2.												
1	5,150	6,000	.....	22,700	8,250	22,300	25,100	18,300	.....	7,000	6,700	.....
2	5,150	6,300	6,550	17,800	.....	.....	22,100	24,800	8,600	7,200	6,300	6,400
3	5,150	.....	6,000	14,500	9,350	54,500	18,300	18,700	8,200	7,100	.....	5,450
4	5,700	6,650	5,750	10,900	9,800	55,600	15,600	.....	8,000	.....	6,300	5,350
5	5,950	5,900	5,500	.....	8,900	38,000	13,400	14,200	7,800	.....	5,800	5,100
6	.....	5,850	5,550	9,300	8,550	24,400	.....	13,700	7,650	.....	5,350	5,450
7	6,200	5,900	5,500	8,550	8,100	19,000	10,900	13,500	7,350	7,650	5,500	.....
8	5,150	5,900	.....	8,200	7,900	17,300	11,000	12,600	.....	7,550	5,750	5,800
9	5,000	6,450	6,200	8,050	.....	.....	13,200	12,400	7,650	7,450	6,800	5,300
10	4,850	.....	6,100	8,000	7,300	15,200	31,500	11,100	7,000	7,000	.....	5,150
11	5,200	6,500	6,950	7,350	7,200	16,500	36,400	.....	7,200	6,950	6,750	5,850
12	5,700	5,350	7,200	.....	7,000	16,700	32,500	9,600	7,100	6,650	7,300	7,200
13	.....	5,300	8,350	8,100	7,000	21,500	.....	9,050	6,350	.....	9,550	7,000
14	5,850	5,550	8,100	7,300	6,850	30,800	17,300	8,750	6,750	6,900	8,450	.....
15	6,900	6,450	.....	7,000	6,700	30,800	18,100	8,350	.....	5,700	7,650	7,200
16	13,450	7,000	35,800	7,200	.....	.....	15,700	8,050	7,000	5,700	7,150	7,250
17	11,600	.....	37,700	7,200	7,000	23,000	13,600	7,750	5,850	6,100	.....	7,100
18	9,400	7,000	20,700	7,150	6,300	32,000	12,900	.....	8,500	6,150	7,100	7,100
19	7,450	5,950	13,800	.....	6,350	31,000	.....	7,750	8,250	5,700	5,900	6,100
20	.....	5,950	11,000	7,200	6,450	23,000	.....	7,700	7,700	.....	5,800	7,200
21	7,550	6,100	9,000	6,650	6,650	19,800	11,000	7,850	7,250	7,000	5,700	.....
22	6,900	.....	.....	7,400	6,450	20,700	11,400	7,700	.....	7,000	6,000	7,100
23	6,750	6,650	6,750	16,200	.....	.....	10,800	7,550	7,550	7,250	6,200	6,450
24	6,550	.....	7,350	21,700	6,650	21,500	10,900	7,100	7,400	7,450	.....	6,700
25	7,000	6,800	.....	18,400	6,300	19,700	10,900	.....	7,150	7,750	7,600	6,900
26	6,550	6,650	8,400	.....	6,550	17,200	10,000	7,700	6,450	7,100	7,200	6.550
27	.....	6,550	8,400	12,300	7,700	15,400	.....	8,500	7,000	.....	6,850	6,750
28	6,750	.....	.....	12,500	11,950	14,200	16,500	11,550	8,700	7,050	6,650	.....
29	6,300	6,900	.....	11,000	.....	13,900	14,500	14,850	.....	6,500	5,800	7,100
30	6,050	6,750	15,000	9,700	.....	.....	12,500	.....	7,350	6,450	7,000	8,200
31	6,100	.....	25,100	9,300	.....	29,100	.....	10,650	.....	6,550	.....	.....
1902–3.												
1	10,650	12,700	7,450	9,400	9,500	15,700	23,800	7,200	4,900	9,550	6,550	5,700
2	10,000	.....	7,450	9,400	10,550	23,900	24,300	7,300	5,550	8,950	4,000	5,700
3	9,200	9,600	7,300	9,250	10,000	24,200	20,700	6,700	5,350	8,600	7,250	6,450
4	7,500	9,500	7,550	9,600	10,250	20,200	19,000	6,550	5,050	.....	6,150	5,800
5	.....	8,700	7,900	11,500	11,850	16,700	.....	6,250	5,250	5,600	6,100	5,250
6	8,100	8,550	7,300	11,500	12,600	15,800	20,300	6,350	5,250	7,900	6,600	.....
7	9,300	8,350	.....	11,100	11,450	14,700	17,000	6,450	800	7,250	7,000	.....
8	10,000	8,350	7,100	10,160	9,450	14,300	15,900	6,350	6,050	6,750	7,050	6,550
9	8,800	.....	7,200	9,550	8,950	20,600	18,300	6,150	5,450	6,900	4,050	5,700
10	8,000	8,150	6,900	8,600	8,900	30,400	20,700	5,800	5,400	7,150	7,000	5,350
11	7,700	7,850	6,550	7,650	9,100	34,400	20,200	5,850	5,450	7,000	6,000	4,900
12	.....	7,750	6,700	8,500	9,650	41,400	17,100	5,550	5,700	3,750	5,950	5,550
13	8,000	7,650	6,950	8,450	12,750	42,400	15,400	5,400	5,700	6,750	6,000	700
14	8,100	7,900	.....	8,350	14,150	37,100	13,950	5,300	15,300	6,450	6,650	5,800
15	7,950	7,000	6,900	8,000	12,900	30,200	12,900	5,100	15,700	6,350	7,000	5,150
16	7,900	.....	6,650	8,100	12,100	27,600	13,950	5,050	15,800	6,450	3,050	5,200
17	7,800	8,050	7,600	7,550	10,550	23,800	16,600	.....	16,300	5,900	6,750	5,050
18	7,650	7,750	9,900	7,100	9,800	21,100	16,300	5,050	13,300	6,450	5,700	5,050
19	.....	7,950	13,050	9,200	10,350	20,000	13,900	4,400	10,800	3,550	5,500	5,800
20	7,500	7,650	12,250	8,000	9,350	19,400	12,750	4,550	9,200	6,700	5,400	.....
21	7,550	7,550	.....	8,000	8,500	22,100	11,850	4,450	10,850	6,450	5,450	5,950
22	8,250	7,450	11,450	8,300	7,800	27,300	10,950	4,250	26,200	7,900	6,750	5,050
23	7,850	.....	18,500	9,500	9,050	29,400	10,050	4,200	34,800	9,000	3,800	5,050
24	7,750	7,550	21,000	9,550	8,950	34,800	9,900	3,050	29,300	8,500	6,500	5,050
25	7,200	7,450	.....	8,400	8,800	36,100	9,350	4,300	22,700	7,900	5,850	5,000
26	.....	7,450	14,100	8,700	8,750	35,000	8,350	3,050	18,900	5,800	5,950	5,700
27	7,800	.....	12,400	8,350	8,800	27,700	7,600	3,100	15,900	7,550	6,450	.....
28	7,350	7,550	.....	8,100	8,700	21,800	7,300	4,500	12,550	7,150	6,650	5,700
29	20,200	7,400	10,250	8,200	.....	19,700	7,150	4,250	11,150	6,800	6,750	4,800
30	25,800	.....	10,050	8,500	.....	.....	.....	.....	9,950	6,750	3,150	4,850
31	17,200	.....	9,700	8,950	.....	.....	.....	2,750	.....	6,600	6,650	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	4,800	2,600	5,250	5,850	5,900	6,200	15,700	42,400	8,300	5,700	5,800	4,800
2	4,800	6,700	5,250	6,000	5,900	6,200	19,700	34,000	7,800	5,800	4,800	4,350
3	5,250	6,250	5,250	.....	5,400	6,250	22,100	26,400	7,750	5,800	5,050	4,500
4	.....	6,250	5,150	6,600	5,400	6,500	20,200	21,000	7,450	5,100	5,050	.....
5	5,350	5,900	6,450	5,650	5,400	7,250	17,000	18,700	5,750	6,900	4,800	200
6	4,900	5,800	200	5,400	6,350	4,600	15,500	16,800	7,750	6,900	4,500	5,400
7	4,900	6,450	5,950	5,250	2,150	6,800	16,200	15,100	7,900	6,800	600	4,600
8	4,900	2,950	5,200	5,300	5,900	7,450	18,000	12,300	9,050	6,100	5,700	4,500
9	4,800	6,550	5,350	6,200	5,450	9,650	18,800	12,300	8,950	5,900	4,950	4,600
10	5,450	5,850	5,400	2,400	5,400	12,450	25,100	12,600	8,500	3,000	4,900	5,600
11	4,850	5,850	5,900	5,900	5,400	13,850	33,500	13,600	7,650	6,300	4,900	.....
12	7,000	5,850	6,200	5,350	5,400	12,150	30,500	16,300	5,550	5,600	4,900	5,300
13	7,350	5,800	2,850	5,350	5,800	10,450	24,700	16,000	7,550	5,300	5,450	4,600
14	7,450	6,550	6,300	5,450	2,150	10,150	20,800	13,000	7,450	5,300	.....	4,600
15	7,200	2,000	6,450	5,800	5,700	9,800	17,100	10,400	6,900	4,800	5,800	4,800
16	7,300	6,450	6,100	6,700	5,400	9,550	14,700	11,000	6,900	5,000	4,800	5,400
17	8,250	5,700	6,400	2,650	5,350	8,950	13,100	14,700	6,700	1,700	4,800	9,200
18	4,350	5,900	6,100	6,100	5,350	8,350	13,000	19,000	5,650	6,450	4,800	5,900
19	7,550	6,900	6,300	5,500	5,350	7,550	13,200	15,200	3,450	5,400	4,800	6,750
20	8,000	7,350	2,050	5,400	6,000	6,450	13,800	19,600	6,250	5,300	5,450	6,400
21	7,550	6,200	6,750	5,400	1,650	8,750	13,400	25,400	6,450	5,050	650	5,500
22	7,500	3,500	9,750	5,350	5,800	9,550	13,400	19,800	5,700	4,100	7,800	5,500
23	7,100	6,900	9,350	6,350	5,750	9,650	12,800	16,200	5,800	4,400	7,600	5,650
24	6,550	6,100	8,250	2,200	6,000	11,050	11,400	13,300	5,700	.....	6,900	5,900
25	3,650	6,000	5,700	6,100	6,100	13,700	12,100	11,650	5,200	5,900	6,400	2,500
26	7,100	1,600	5,200	5,450	6,300	20,900	13,000	10,850	2,700	5,000	6,350	6,200
27	6,700	6,000	5,500	5,450	6,900	32,500	14,300	10,600	5,800	4,900	6,200	5,700
28	6,150	6,650	7,150	5,450	4,050	31,700	17,900	9,650	5,700	5,000	1,100	5,900
29	6,200	1,650	8,450	5,350	6,850	27,700	36,600	8,200	5,800	4,500	5,900	5,800
30	6,200	6,550	5,900	6,300	.....	20,800	44,600	7,400	5,900	4,400	4,800	6,000
31	6,550	.....	5,900	2,500	.....	17,400	.....	9,050	.....	1,600	4,800	.....
1904–5.												
1	7,200	5,700	5,000	200	5,200	4,700	40,500	8,350	5,600	6,350	4,600	5,900
2	6,400	5,500	5,000	5,150	5,100	4,550	33,300	8,000	5,100	3,850	7,150	5,700
3	7,200	5,400	5,100	5,250	5,100	4,550	25,100	7,700	5,050	3,500	7,100	4,650
4	6,900	5,700	.....	5,350	5,200	5,050	19,800	7,400	2,050	5,900	6,900	8,850
5	6,800	6,200	5,300	5,250	5,050	450	16,900	7,300	5,650	7,100	6,550	20,500
6	6,800	2,200	4,900	4,900	6,100	5,250	17,100	7,450	5,050	6,650	2,500	18,100
7	6,300	6,100	4,600	5,450	4,900	4,650	23,000	8,500	5,050	6,550	6,100	13,450
8	6,400	5,300	4,500	5,100	4,900	4,600	22,300	7,500	5,100	5,900	5,250	10,500
9	2,700	5,300	4,500	7,750	4,700	4,800	18,100	8,050	6,100	2,700	4,900	8,700
10	6,400	5,000	4,600	7,900	4,700	5,200	15,000	7,400	6,000	6,100	4,950	6,350
11	5,600	4,900	.....	8,250	5,150	5,700	13,900	7,200	3,200	6,050	4,900	7,650
12	5,300	5,800	4,800	8,100	300	3,300	16,000	7,100	6,350	5,450	5,350	7,600
13	5,300	300	4,000	8,000	5,550	6,600	17,800	6,650	5,950	5,500	.....	7,300
14	6,100	5,900	4,000	7,600	4,850	5,900	16,500	4,500	5,700	5,350	5,150	9,050
15	6,100	5,800	3,900	4,850	4,850	6,000	14,250	7,100	6,450	6,000	5,000	8,650
16	3,000	5,600	3,900	7,400	4,800	6,200	12,550	6,750	6,650	1,250	5,250	7,300
17	6,400	5,500	3,800	6,250	4,800	6,650	11,300	7,450	6,000	6,050	5,950	5,550
18	5,300	5,700	.....	6,150	5,050	7,050	11,200	8,000	3,100	5,250	6,050	7,100
19	5,300	6,200	4,000	6,150	250	5,500	9,200	8,000	6,450	5,150	6,450	8,800
20	5,300	1,400	3,900	6,750	5,550	10,500	9,700	7,650	6,250	5,000	3,200	18,800
21	5,600	5,800	3,900	6,700	4,750	10,650	9,050	5,800	6,650	4,900	6,200	14,300
22	6,100	5,500	3,900	3,050	4,700	9,550	8,800	7,250	7,000	5,700	5,150	12,250
23	9,000	5,700	3,900	6,500	4,650	9,550	10,650	6,600	9,050	.....	5,150	10,000
24	7,900	1,400	3,700	5,850	4,650	9,350	10,400	6,550	7,900	5,350	5,150	7,650
25	7,400	5,900	.....	5,900	5,000	8,950	9,400	6,550	6,900	5,050	5,050	7,900
26	7,000	6,400	300	5,550	250	13,750	8,800	6,300	7,100	4,900	5,050	7,250
27	6,600	2,000	4,300	5,350	5,250	30,100	8,600	6,000	6,900	4,700	.....	7,050
28	6,900	5,800	4,500	5,800	4,700	32,200	8,350	5,500	8,300	4,750	5,000	7,050
29	6,750	5,250	5,650	6,250	.....	36,100	8,250	6,100	8,000	4,850	4,750	6,750
30	3,700	5,100	5,650	6,150	.....	40,400	6,850	4,900	7,000	.....	4,700	6,550
31	6,600	.....	5,900	5,300	.....	40,600	.....	5,450	.....	4,600	5,150	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	3,750	5,500	7,050	8,300	7,850	7,900	15,400	9,400	20,700	7,450	7,750	6,100
2	6,500	5,500	6,750	8,000	7,900	7,650	14,000	9,350	15,700	10,300	10,800	1,950
3	6,300	5,800	5,050	7,400	7,300	7,200	12,300	9,650	13,400	10,150	7,400	2,100
4	6,250	6,450	10,050	7,400	4,700	6,750	11,550	9,750	13,050	8,300	6,550	5,550
5	6,300	3,600	15,300	7,550	7,300	11,400	11,950	10,150	11,850	10,200	4,750	5,050
6	6,200	6,500	11,300	7,400	7,200	10,350	14,150	8,550	10,500	10,450	7,200	5,000
7	6,700	6,600	9,950	6,050	7,050	9,700	16,700	10,050	10,100	8,500	7,150	5,050
8	2,750	7,300	8,800	7,550	6,750	9,050	13,650	9,950	12,100	6,900	6,750	4,700
9	6,250	7,400	7,750	7,450	6,750	8,700	13,050	9,400	12,350	7,900	7,100	.....
10	5,550	7,100	6,000	7,350	6,650	8,950	13,150	9,300	11,300	7,400	7,000	4,900
11	5,550	6,650	7,450	7,300	2,950	6,550	14,150	11,100	11,400	7,400	6,100	4,900
12	5,650	4,000	6,900	7,200	6,750	8,700	17,300	10,400	10,650	7,450	3,200	4,800
13	5,600	7,000	7,000	6,950	6,800	8,300	18,700	8,550	9,550	7,450	7,000	4,500
14	6,100	6,250	7,200	4,850	6,750	8,350	18,200	9,250	8,550	6,500	6,300	4,300
15	4,150	6,400	7,200	7,350	6,650	7,700	18,100	10,150	8,000	4,200	5,700	4,500
16	6,150	6,500	6,750	7,400	6,450	7,450	27,500	9,050	7,400	7,350	5,700	.....
17	6,100	6,700	3,450	7,800	6,300	6,000	35,400	8,500	6,800	6,500	5,550	4,850
18	6,100	6,350	7,200	8,250	3,650	4,900	29,500	8,600	13,950	6,550	5,700	4,650
19	6,100	3,400	6,500	8,000	6,650	6,750	22,900	8,850	16,200	6,900	1,400	4,300
20	6,100	6,500	6,550	7,050	6,500	6,900	20,300	7,600	14,000	6,900	5,900	4,350
21	6,100	6,300	7,300	.....	6,500	7,000	17,800	8,500	13,250	6,300	5,500	4,250
22	3,700	6,000	7,200	7,700	7,550	7,100	16,500	7,800	10,300	3,800	5,050	4,400
23	6,550	6,000	7,200	8,350	8,950	7,300	17,000	7,150	9,050	6,550	5,050	.....
24	6,250	5,850	6,300	14,150	8,800	6,700	15,200	7,100	8,150	6,500	5,150	4,650
25	6,300	6,250	5,900	24,700	7,600	4,000	12,900	7,100	11,900	7,150	5,450	4,650
26	6,250	1,650	7,500	17,200	9,050	7,350	11,550	6,900	12,600	7,200	750	4,550
27	6,350	6,450	7,200	13,200	10,450	7,300	10,600	7,000	10,800	7,100	5,250	4,550
28	6,400	6,150	7,200	9,750	9,150	9,250	9,550	13,450	9,450	6,550	5,400	4,500
29	2,700	6,100	7,150	8,700	.....	17,100	8,350	37,500	8,350	3,150	5,250	4,450
30	6,100	1,400	6,800	8,300	.....	17,600	9,400	38,400	7,750	6,500	5,250	.....
31	6,050	.....	7,000	7,900	.....	16,300	.....	28,300	.....	6,550	5,600	.....
1906–7.												
1	4,550	6,500	6,650	6,550	5,900	5,250	25,400	14,000	7,050	6,300	5,800	2,700
2	4,550	5,700	2,950	9,050	6,550	5,900	20,700	17,200	5,050	6,750	5,700	1,400
3	4,550	6,150	7,150	9,750	3,450	400	16,200	14,400	7,650	7,300	6,100	4,800
4	4,500	.....	6,650	9,450	7,100	6,550	13,750	11,300	8,600	4,100	.....	4,800
5	4,500	6,300	4,800	9,200	6,550	5,600	12,550	9,950	9,650	5,200	5,600	5,050
6	4,400	5,700	4,800	8,700	6,100	5,550	12,500	11,000	9,550	4,350	5,550	5,150
7	.....	5,600	4,900	9,250	6,100	5,700	11,950	10,300	10,800	3,400	5,600	4,550
8	4,300	5,200	5,750	8,950	5,900	5,600	11,750	9,950	10,500	6,950	5,550	.....
9	4,300	4,900	200	8,750	6,850	5,850	11,100	9,750	.....	6,500	5,550	5,100
10	4,400	4,550	5,450	8,250	2,750	1,150	10,500	9,800	8,750	6,700	6,300	5,450
11	5,100	.....	5,400	7,950	6,800	6,450	10,300	9,050	8,300	6,450	.....	5,350
12	4,750	5,450	5,250	7,250	6,300	5,700	10,400	8,150	8,050	6,450	5,450	5,250
13	5,200	5,550	5,350	5,100	6,100	5,600	11,050	9,100	7,900	6,350	5,350	5,250
14	1,750	6,000	5,400	7,700	6,100	5,700	11,150	8,600	8,100	4,100	5,350	6,500
15	5,600	6,000	5,450	7,350	6,000	6,150	12,100	8,300	7,000	6,750	5,050	2,900
16	5,700	6,800	300	7,150	6,350	7,000	12,350	9,050	4,550	6,900	4,400	5,700
17	5,150	6,950	5,700	7,200	1,150	4,400	12,250	9,300	7,450	6,600	4,150	5,450
18	5,100	1,250	5,500	7,150	6,800	9,000	11,700	13,050	7,400	6,250	.....	5,200
19	4,700	6,300	7,750	6,550	6,150	10,300	10,850	11,700	7,350	6,200	4,450	5,050
20	4,450	5,950	5,500	4,450	6,050	10,050	10,200	10,900	6,750	6,350	4,450	5,100
21	.....	7,300	5,500	7,800	6,050	9,300	9,050	9,900	6,700	.....	4,450	5,550
22	4,800	7,650	6,300	7,700	6,100	9,350	9,700	9,100	6,550	6,450	4,450	.....
23	5,700	7,550	450	7,750	6,450	9,050	8,250	8,500	3,000	5,900	4,500	5,150
24	6,000	7,150	6,800	7,800	650	11,800	9,500	8,050	6,750	5,900	2,700	4,950
25	5,950	4,450	650	7,550	6,800	13,450	13,600	7,250	6,550	5,400	250	7,700
26	5,900	7,450	5,900	7,150	5,900	12,800	17,000	5,350	6,050	5,500	2,600	8,100
27	6,050	7,300	5,800	4,000	5,400	12,450	13,300	7,650	5,900	6,300	2,700	7,500
28	4,300	7,150	6,200	7,700	5,400	12,500	15,300	7,750	5,900	1,800	3,200	6,900
29	6,750	2,600	6,600	6,950	.....	14,200	15,000	8,100	6,000	5,850	3,150	4,900
30	6,550	7,300	450	7,000	.....	17,900	14,000	8,000	3,100	5,800	3,250	13,450
31	6,350	.....	5,950	6,800	.....	22,200	.....	7,900	.....	5,850	3,100	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the year ending Sept. 30, 1848–1801; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907-8.												
1	17,800	16,200	6,950	14,580	6,468	6,924	21,005	16,070	13,980	6,252	5,056	5,748
2	13,150	12,350	8,400	13,080	6,060	8,950	18,205	17,330	14,340	5,079	95	5,820
3	10,150	11,550	8,350	11,350	9,525	8,875	16,280	18,100	11,640	4,800	6,132	5,748
4	8,800	24,300	8,050	9,000	8,500	9,075	14,130	17,855	10,025	219	5,940	5,010
5	8,500	24,300	8,050	8,200	8,375	8,825	11,375	18,660	8,925	2,024	5,940	4,700
6	8,300	16,800	7,500	9,050	8,175	7,925	11,790	16,245	8,125	6,132	6,420	47
7	8,700	22,100	6,750	8,625	6,300	7,750	11,940	14,070	6,252	5,940	10,800	278
8	8,700	34,500	5,150	10,500	6,372	6,468	13,110	14,100	8,750	5,892	8,000	5,700
9	9,500	30,000	7,600	13,110	7,625	9,125	14,730	19,955	8,375	5,868	6,444	5,820
10	13,250	21,800	7,450	12,510	8,250	9,125	14,370	20,655	8,375	5,424	7 188	5,700
11	11,300	18,100	9,500	10,625	7,875	9,175	13,830	19,430	8,375	5,820	6,660	5,355
12	8,800	15,300	24,600	9,250	7,800	9,175	14,280	16,770	8,000	77	6,660	4,700
13	7,300	13,400	19,000	13,770	7,625	9,300	14,880	15,030	7,212	5,585	6,420	34
14	8,800	12,100	12,900	16,105	5,940	12,180	13,380	14,580	3,743	5,401	6,012	5,493
15	8,150	11,000	9,150	13,170	6,468	13,290	12,180	14,610	7,625	5,355	5,516	5,240
16	7,900	9,800	9,550	12,480	20,480	19,220	11,700	14,220	7,750	5,355	3,376	5,125
17	7,650	8,500	10,200	9,825	25,030	21,005	12,540	12,780	6,420	4,640	6,612	4,800
18	7,500	9,350	9,800	9,525	22,160	18,800	11,350	12,450	6,420	4,400	6,420	4,540
19	7,150	8,950	9,300	8,375	15,540	15,840	10,800	11,580	7,140	39	6,012	4,500
20	4,300	9,000	8,550	9,650	11,050	12,930	12,330	10,925	6,900	5,470	5,654	33
21	7,650	8,600	7,900	9,075	9,900	11,580	13,680	10,550	3,466	5,892	5,401	4,300
22	7,550	8,500	6,350	9,200	9,125	10,200	12,150	9,775	6,180	8,125	4,800	3,466
23	6,800	8,250	8,400	9,100	8,450	11,730	12,060	9,850	6,132	7,875	.....	3,466
24	7,050	7,100	9,300	7,380	9,175	12,930	10,550	10,300	6,132	6,780	6,852	3,430
25	7,150	8,800	13,700	6,540	8,700	20,025	11,460	11,100	6,132	6,468	6,300	3,430
26	6,900	9,500	14,150	6,060	8,750	20,130	.....	10,150	5,820	2,926	6,108	3,430
27	3,750	10,050	12,100	9,075	9,100	18,345	14,370	9,500	4,800	7,212	6,060	63
28	6,450	.....	10,300	9,125	8,550	20,340	16,980	9,175	756	7,260	5,820	4,040
29	7,750	9,100	10,300	9,325	8,000	21,530	17,750	8,500	6,420	6,300	5,654	4,020
30	23,300	8,350	11,250	10,300	.....	24,365	20,235	.....	6,300	6,060	35	4,200
31	22,500	.....	12,600	7,260	.....	24,225	.....	.....	.....	5,240	6,036	.....
1908-9.												
1	4,220	73	5,424	4,800	6,300	11,375	15,780	12,870	8,250	5,700	22	2,980
2	3,900	4,400	5,355	4,500	5,516	10,500	15,510	12,630	8,125	5,148	4,905	3,286
3	4,160	4,720	4,740	86	5,539	10,025	15,210	14,250	7,875	5,240	4,660	3,860
4	57	4,700	4,760	4,600	5,424	9,700	14,670	13,530	7,950	41	4,620	3,840
5	4,300	4,640	4,600	4,100	5,355	9,475	14,580	12,390	7,500	1,735	4,660	29
6	4,200	4,300	72	4,300	5,378	8,750	16,035	12,780	4,080	5,820	4,700	784
7	4,200	4,160	4,660	6,780	3,106	6,036	19,080	11,888	8,325	5,608	4,440	2,805
8	4,200	35	5,079	10,850	6,660	9,050	24,155	12,120	8,750	5,654	20	.....
9	4,160	4,680	5,125	9,400	6,708	8,325	26,950	11,200	8,250	6,300	4,600	4,500
10	4,000	4,400	5,125	5,240	7,332	8,250	22,930	12,330	8,125	5,940	4,660	4,200
11	39	4,360	4,700	7,825	8,325	9,250	17,155	12,480	7,825	20	4,500	4,080
12	4,240	4,340	4,540	7,825	8,400	8,925	14,280	13,140	7,875	5,240	4,460	30
13	4,200	4,140	107	7,260	8,125	9,125	12,630	11,888	4,400	5,240	4,460	4,600
14	4,200	4,060	4,968	7,260	6,348	6,612	13,080	10,375	7,500	5,194	4,300	4,580
15	4,180	45	5,286	7,212	8,375	9,250	26,430	9,450	7,625	4,800	5	4,540
16	3,860	4,400	5,171	6,660	8,375	8,450	40,510	8,125	7,625	4,863	4,460	4,540
17	3,880	4,340	5,148	195	8,075	9,000	36,556	9,400	7,116	4,660	4,100	4,500
18	25	4,340	5,079	6,108	7,260	8,875	28,030	11,430	6,900	40	4,360	4,400
19	4,200	4,360	4,863	5,240	7,950	8,700	23,665	11,200	7,140	4,968	4,500	21
20	4,200	4,320	85	5,171	8,075	7,625	20,655	10,875	6,972	4,926	4,460	4,260
21	4,200	4,300	5,056	5,470	10,425	5,355	24,155	10,300	7,750	4,947	4,620	3,840
22	4,200	46	4,700	5,102	14,130	8,375	19,780	9,525	7,500	4,947	30	3,860
23	4,000	4,340	4,640	5,940	14,280	8,125	18,275	7,700	7,625	4,947	4,620	3,860
24	3,800	4,600	4,520	1,290	13,740	8,250	18,100	9,125	7,575	4,740	4,660	3,840
25	31	4,600	79	6,300	16,980	8,500	14,970	8,925	6,948	37	4,620	3,940
26	4,000	88	735	6,300	16,980	19,255	13,890	8,500	6,180	5,194	4,600	27
27	3,376	4,740	140	6,300	15,330	24,715	12,990	8,375	2,260	5,240	4,600	4,000
28	3,376	4,700	4,720	6,276	12,630	20,760	12,360	8,200	6,540	5,125	4,200	4,240
29	3,394	47	4,600	6,564	.....	19,045	13,530	7,750	5,700	5,010	7	4,800
30	4,040	5,010	4,540	6,468	.....	17,330	13,680	6,852	5,700	4,660	4,406	5,585
31	4,020	.....	4,500	2,516	.....	16,630	.....	8,375	.....	4,360	3,900	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	7,140	4,500	5,470	3,762	8,425	16,385	19,080	11,888	7,500	5,240	4,905	3,556
2	6,780	4,460	5,378	89	8,250	25,380	17,085	12,180	7,452	4,560	4,720	4,260
3	.....	4,500	5,355	4,260	8,150	27,470	14,970	11,173	8,875	1,884	4,700	3,250
4	6,780	4,500	5,010	4,220	8,000	24,470	14,280	10,475	7,260	2,350	4,680	18
5	4,968	4,700	66	4,140	7,380	21,530	12,510	11,050	4,060	4,520	4,620	121
6	5,010	4,040	5,355	3,304	4,320	19,360	12,150	11,730	7,500	4,320	4,560	4,760
7	4,560	36	5,056	4,500	7,750	19,850	13,890	10,375	7,380	4,360	3,629	4,500
8	4,460	4,440	5,240	4,600	6,444	22,510	14,580	8,225	7,500	4,360	5,700	4,760
9	4,400	4,400	5,079	240	6,420	22,930	12,330	8,875	8,200	4,200	5,700	6,108
10	13	4,440	5,539	5,056	6,780	19,080	10,200	8,875	6,012	1,898	4,580	5,940
11	4,520	4,400	5,125	5,148	7,332	16,630	10,425	8,625	6,660	5,079	4,620	1,940
12	4,560	4,400	89	5,125	6,900	14,430	9,700	8,525	5,892	5,125	5,010	5,516
13	4,560	3,880	5,286	5,194	3,724	12,630	9,250	8,250	8,925	5,125	4,500	5,010
14	4,520	11	5,424	5,171	7,428	13,740	8,875	7,625	9,450	4,947	37	4,905
15	4,400	4,000	6,204	5,240	.....	13,530	8,125	5,286	8,700	4,926	4,968	4,905
16	4,200	4,000	6,732	216	7,380	12,960	7,625	7,925	7,800	4,440	4,968	4,320
17	5	3,980	6,948	5,631	7,140	12,330	5,240	7,750	7,380	55	4,800	4,000
18	4,200	4,000	6,612	5,470	7,188	11,430	7,700	7,700	6,900	4,640	4,760	10
19	4,120	4,040	255	5,470	7,140	10,425	5,940	7,675	6,492	4,560	6,252	4,400
20	4,100	3,466	6,252	5,772	4,040	8,825	9,800	7,760	8,500	4,560	8,000	4,400
21	4,100	25	5,447	5,608	7,625	11,050	12,240	7,625	7,875	4,500	35	4,400
22	4,080	4,000	5,355	6,228	7,975	11,888	11,670	5,378	7,212	4,500	5,516	4,360
23	3,920	4,000	5,240	11,300	8,075	12,540	10,925	8,000	7,164	4,160	5,194	4,300
24	34	4,100	5,240	20,970	8,125	12,720	12,780	7,750	6,540	61	5,010	4,140
25	4,320	70	95	16,175	8,275	13,680	12,330	7,675	5,401	4,700	5,010	26
26	4,600	4,600	270	13,080	7,825	16,875	10,925	7,575	3,034	4,560	5,010	4,380
27	4,600	4,560	5,355	11,250	5,820	21,530	13,140	7,380	7,092	4,540	2,805	4,360
28	4,600	2,335	4,600	9,675	9,450	19,080	21,005	7,260	7,020	4,580	13	4,460
29	4,500	6,372	4,660	8,875	.....	16,805	17,855	4,440	6,876	.....	4,120	4,500
30	4,360	6,420	4,600	7,750	.....	16,000	14,100	4,020	5,516	.....	3,705	4,540
31	.....	.....	4,080	8,975	.....	19,080	.....	7,625	.....	630	3,592	.....
1910–11.												
1	4,140	3,088	4,905	888	6,300	5,820	16,875	15,510	6,972	4,863	5,240	6,012
2	8	3,070	4,905	5,470	6,036	6,228	11,640	15,180	6,492	25	5,240	4,947
3	4,140	3,430	4,600	5,470	5,125	6,060	10,750	15,510	4,640	1,856	5,125	2,052
4	4,140	3,900	42	6,588	4,800	5,585	9,575	13,530	2,618	83	5,056	1,800
5	4,060	4,000	4,700	7,575	338	805	9,200	10,750	5,608	4,460	4,842	6,300
6	4,100	3,430	4,200	8,000	5,748	5,724	9,400	9,400	6,132	4,200	32	5,240
7	4,100	5,820	4,160	7,140	5,940	5,378	13,980	6,660	6,228	2,380	4,120	5,125
8	3,743	6,108	4,140	4,080	5,724	5,332	18,905	9,075	6,252	3,160	4,200	4,540
9	15	5,988	4,100	7,188	5,286	5,171	19,360	8,775	6,228	721	4,140	4,340
10	3,960	5,940	3,960	6,900	5,286	5,171	18,205	8,850	6,588	5,424	4,040	20
11	3,900	5,844	83	6,420	4,640	4,660	15,480	8,750	2,499	5,171	4,000	4,360
12	3,800	5,844	3,705	6,228	210	195	14,280	8,500	6,300	4,700	3,520	4,842
13	4,000	77	2,980	6,540	4,760	5,309	13,380	7,875	6,228	4,120	10	5,079
14	3,840	5,355	2,890	6,180	4,800	5,309	13,530	5,585	6,276	3,268	3,070	5,309
15	3,743	5,355	2,890	440	4,800	6,420	15,420	8,450	7,140	3,250	3,016	5,286
16	13	5,194	2,980	6,180	4,760	11,888	19,955	8,375	7,875	15	3,016	4,600
17	4,000	5,125	2,686	5,585	4,700	8,750	20,935	8,125	7,140	3,394	3,430	41
18	4,020	4,600	76	5,424	4,400	7,452	16,630	7,305	3,484	2,230	3,610	5,964
19	3,705	4,340	2,980	5,309	198	4,440	13,290	7,525	7,260	2,230	3,466	5,868
20	3,705	30	2,980	4,680	4,905	7,750	12,570	7,332	7,188	2,335	15	5,892
21	3,705	4,600	2,926	4,340	4,821	7,700	12,930	3,106	5,309	2,380	4,140	5,240
22	3,358	4,500	2,980	115	4,760	7,650	12,330	7,332	5,309	2,380	4,060	4,905
23	34	4,460	2,944	4,821	4,740	7,775	10,875	7,044	5,892	17	2,944	4,660
24	3,667	204	2,926	4,700	4,760	7,800	11,375	6,924	5,700	3,610	2,980	21
25	2,771	4,340	127	4,600	4,400	.....	10,800	6,852	55	3,340	3,016	5,010
26	2,771	4,500	5,240	4,660	189	3,724	11,888	6,972	5,700	3,610	3,070	4,947
27	3,705	39	4,500	4,640	4,947	8,250	12,690	6,228	5,286	3,574	51	4,905
28	3,800	4,500	4,520	4,440	5,700	11,580	13,890	3,686	5,240	3,781	3,106	4,926
29	3,574	4,500	4,460	1,940	.....	15,480	14,430	3,960	5,194	3,520	3,900	5,010
30	29	4,500	5,940	5,700	.....	17,085	14,580	2,771	4,740	33	4,100	4,460
31	3,781	.....	6,012	6,948	.....	21,705	.....	7,188	.....	4,600	4,300	.....

Ten-hour discharge, in second-feet, of Merrimack River of Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911-12.												
1	34	7,900	9,550	8,175	6,972	8,000	23,280	11,200	15,030	6,132	5,355	29
2	5,309	7,825	8,625	7,825	6,732	7,750	22,755	10,925	14,070	5,916	5,286	30
3	5,470	7,404	5,892	8,375	6,732	2,890	22,685	10,600	13,320	5,748	5,240	5,585
4	5,401	7,380	8,625	8,250	2,771	7,775	20,900	9,900	12,930	162	30	5,401
5	5,940	3,340	8,275	8,250	6,660	6,660	17,995	7,140	12,240	5,772	5,772	5,585
6	7,575	7,452	7,825	7,925	6,420	6,540	16,665	10,150	10,975	5,401	5,820	6.108
7	7,308	7,404	7,800	3,880	6,396	6,420	18,940	10,150	10,300	46	5,700	7,380
8	3,648	7,650	8,175	7,625	6,372	6,420	24,330	11,125	9,125	4,660	5,940	29
9	7,800	8,275	7,625	7,625	6,396	7,500	29,910	11,125	6,804	4,600	6,108	6,372
10	6,660	8,050	4,100	6,420	6,684	3,430	24,855	11,580	9,475	4,500	5,988	6,252
11	6,612	7,380	7,925	6,612	1,314	7,700	20,305	10,925	7,625	4,700	36	6,132
12	122	4,120	7,850	7,308	6,348	7,700	17,400	8,375	8,550	4,500	5,539	5,010
13	6,780	8,075	7,875	6,948	6,108	9,000	16,105	10,800	8,550	4,300	7,500	5,010
14	6,780	7,875	8,500	3,610	6,012	12,480	14,490	10,925	8,325	72	7,500	4,800
15	45	8,250	9,075	6,852	5,585	15,030	15,330	12,060	7,700	4,884	7,284	30
16	5,631	8,675	8,325	6,468	5,724	18,065	14,880	11,175	3,430	5,010	7,260	5,286
17	5,585	8,250	5,772	6,732	6,468	23,665	16,105	11,300	7,875	4,905	7,020	5,988
18	5,562	7,975	9,450	6,780	234	24,680	21,355	13,980	7,675	4,440	66	5,892
19	5,724	6,612	9,275	6,948	5,940	23,105	21,705	13,710	6,732	4,560	6,492	5,748
20	9,000	9,550	8,800	7,380	5,916	23,630	21,355	12,630	6,732	4,400	5,988	7,092
21	11,250	9,300	8,525	4,240	6,084	23,560	18,905	11,350	7,452	31	6,060	7,332
22	8,625	8,825	8,375	7,308	.....	20,270	17,505	11,430	7,380	4,720	5,309	38
23	10,150	8,625	8,000	7,750	7,825	16,805	16,385	13,530	.....	5,631	5,332	6,972
24	10,150	8,125	16,280	7,625	7,975	14,610	18,555	13,020	6,612	5,585	5,868	6,732
25	10,325	7,625	15,780	8,075	4,600	12,630	18,100	12,330	6,492	6,012	60	6,660
26	9,125	6,036	13,440	8,000	8,800	11,460	14,580	10,375	6,420	6,060	5,892	6,492
27	8,125	8,875	11,250	7,260	8,625	10,875	13,380	10,925	5,940	5,772	5,079	6,396
28	7,380	8,575	10,675	3,394	8,625	10,475	11,580	10,425	5,378	35	5,125	6,372
29	4,400	8,500	8,175	7,625	8,150	12,270	13,470	9,900	4,968	5,424	5,079	27
30	8,300	5,033	7,525	7,356	.....	22,930	12,240	7,020	59	5,355	5,079	6,060
31	7,700	.....	4,760	6,900	.....	24,960	.....	11,460	.....	5,378	4,760	.....
1912-13.												
1	5,988	7,625	3,940	10,475	8,625	8,425	19,010	10,925	11,730	5,194	3,920	833
2	5,539	7,260	8,125	11,225	6,204	6,540	23,350	10,025	11,490	5,010	3,743	4,926
3	5,171	4,289	7,925	10,750	9,075	8,675	18,030	.....	10,025	5,010	50	4,600
4	6,060	8,250	7,950	11,888	8,450	8,675	15,030	6,636	9,325	112	3,900	4,560
5	6,348	8,025	9,150	11,730	8,500	8,950	13,680	9,250	8,825	306	4,140	4,520
6	26	7,750	8,675	12,480	8,375	8,525	13,380	8,950	8,750	1,748	4,000	4,500
7	5,940	7,625	8,500	10,725	8,200	8,325	14,220	8,875	8,125	5,240	4,140	40
8	5,820	7,625	8,075	10,225	8,000	7,825	13,100	8,800	4,800	4,905	4,340	4,060
9	5,700	13,650	9,250	8,325	4,040	3,592	11,888	8,750	8,575	4,700	4,240	4,100
10	5,677	12,570	8,425	8,325	7,875	8,300	11,050	8,425	7,775	4,700	47	3,820
11	5,171	10,475	8,275	8,375	7,625	86	10,675	4,400	7,550	4,926	4,300	3,860
12	370	9,075	8,175	6,564	6,372	9,400	11,200	8,650	7,550	4,700	3,800	3,940
13	32	8,475	7,925	8,975	6,828	9,900	12,930	8,200	7,500	25	3,800	3,648
14	5,772	8,375	7,500	8,800	7,188	10,225	15,480	8,125	7,308	5,010	3,840	32
15	5,700	8,700	3,340	9,075	7,236	14,790	15,750	7,500	2,095	5,010	3,800	3,430
16	5,700	9,700	7,775	8,850	2,962	19,920	15,120	7,675	6,660	4,905	3,610	3,196
17	6,348	8,025	7,625	8,825	7,308	24,365	14,310	7,800	6,588	4,905	29	3,232
18	6,060	9,000	7,600	8,750	7,020	19,045	13,110	3,430	6,180	4,905	3,686	3,196
19	5,286	8,550	7,750	7,800	7,020	14,280	10,925	7,575	6,132	4,700	3,743	3,250
20	31	8,350	8,125	10,875	6,660	12,270	9,800	6,612	5,700	33	3,743	3,250
21	5,700	8,250	8,625	11,125	6,708	14,370	11,460	6,852	6,420	4,842	3,629	41
22	4,740	7,950	5,447	10,650	4,821	20,795	10,675	6,900	97	4,300	3,610	3,610
23	4,720	7,625	8,375	10,475	4,947	26,510	10,150	7,380	6,900	4,300	3,430	3,762
24	5,585	3,762	8,000	9,900	8,500	18,555	9,850	7,825	5,892	3,900	24	5,056
25	6,780	8,075	2,155	9,700	8,650	14,730	9,900	10,200	5,470	3,900	3,016	8,125
26	13,410	8,150	7,625	7,925	8,375	16,945	9,300	13,080	5,401	3,800	2,980	7,284
27	9,900	8,325	7,675	9,400	8,200	29,830	8,000	11,790	5,240	52	2,926	6,252
28	9,600	4,620	6,900	9,000	8,150	33,150	10,025	10,300	5,654	3,800	2,926	47
29	8,300	8,300	4,420	8,500	.....	39,542	10,075	10,350	61	3,743	3,340	5,355
30	7,950	7,875	8,375	8,425	.....	26,255	10,800	14,940	5,355	3,781	240	4,780
31	7,825	.....	9,000	8,575	.....	20,830	.....	15,780	.....	3,940	47	.....

Ten-hour discharge, in second-feet, of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	4,640	7,875	8,275	7,452	7,875	3,520	20,305	25,485	8,300	5,654	4,760	6,060
2	4,000	4,300	7,750	7,332	9,900	13,440	21,530	21,915	7,875	6,540	15	5,988
3	5,424	8,350	7,675	7,260	9,650	25,135	29,230	17,365	7,020	6,900	5,056	5,470
4	5,868	7,550	7,750	2,380	9,400	30,630	26,630	16,105	7,044	138	4,863	5,194
5	2,980	7,380	7,825	7,140	9,525	29,270	20,900	15,690	7,452	2,737	5,056	4,240
6	6,060	7,044	8,000	7,140	9,400	24,435	18,275	17,435	7,476	5,470	5,010	1,968
7	5,631	6,948	3,940	6,732	8,750	19,780	15,870	19,360	5,539	5,148	5,010	1,631
8	5,470	7,188	8,325	7,140	5,309	16,630	15,120	18,695	7,625	5,844	4,660	5,470
9	5,355	630	9,850	7,020	8,800	14,790	16,805	15,930	8,150	5,654	19	5,286
10	5,631	7,800	9,850	7,140	8,425	12,990	23,630	15,150	7,575	5,539	4,760	5,286
11	6,420	13,860	9,075	2,170	8,000	11,175	23,175	16,035	7,625	5,470	4,560	5,125
12	50	11,610	8,625	7,260	7,825	10,625	19,255	14,370	7,260	2,305	4,620	4,905
13	255	9,325	8,700	6,444	7,428	10,200	18,835	14,010	7,068	6,276	4,540	92
14	5,654	8,625	4,700	6,420	7,625	9,950	18,205	15,480	1,605	7,140	4,760	5,079
15	5,516	9,850	8,425	6,156	3,016	8,125	16,140	15,630	7,625	7,428	4,700	4,800
16	6,324	4,420	8,175	5,585	7,260	9,775	15,000	13,920	5,940	5,988	38	4,800
17	6,036	8,375	8,000	6,180	6,852	10,725	15,720	11,300	6,300	5,194	5,010	4,800
18	6,660	8,150	8,025	267	6,828	11,225	15,570	11,820	6,252	5,286	5,056	4,400
19	72	7,140	8,250	6,372	6,828	11,850	15,360	11,050	6,252	38	4,947	4,300
20	5,309	7,332	7,875	5,470	6,780	11,175	16,840	10,675	6,540	5,964	4,947	40
21	6,804	7,625	2,771	5,539	6,780	10,025	26,630	10,225	298	5,892	5,010	4,400
22	8,175	8,175	7,750	5,940	3,340	7,428	36,030	10,025	6,900	5,820	4,968	4,280
23	8,675	4,340	7,825	6,420	3,106	10,075	27,390	9,325	5,820	5,240	38	4,240
24	8,075	8,100	7,875	6,780	7,675	9,775	20,410	7,044	5,585	5,240	5,700	4,200
25	7,188	7,775	2,669	1,605	6,540	9,775	16,350	9,450	5,585	5,010	5,964	4,200
26	4,968	7,625	8,125	7,380	6,372	9,850	13,830	8,925	5,539	17	5,988	4,000
27	10,025	1,842	8,000	7,500	6,252	11,580	18,555	8,800	6,540	5,010	5,493	18
28	10,150	7,212	3,520	8,425	6,972	17,680	26,185	8,625	47	5,010	5,355	3,648
29	9,650	7,140	8,075	9,000	.....	25,870	26,010	8,150	5,772	4,968	5,056	3,686
30	9,050	3,160	7,550	9,125	.....	25,450	25,170	4,200	5,654	4,968	112	3,629
31	8,600	.....	7,500	9,050	.....	22,510	.....	4,100	.....	4,905	5,585	.....
1914–15.												
1	3,667	17	4,842	4,040	7,625	17,680	7,750	7,750	6,348	5,194	6,108	7,020
2	3,648	3,705	4,863	4,040	7,332	13,620	7,675	11,300	6,420	5,700	8,425	6,828
3	3,574	3,667	5,056	130	7,140	12,030	7,092	11,175	6,300	6,612	8,250	6,612
4	19	3,743	5,585	3,743	6,492	8,825	4,140	10,100	5,355	12,480	8,925	6,300
5	3,556	3,724	6,108	3,705	6,540	9,975	7,950	9,250	5,240	11,970	17,855	3,466
6	3,610	3,705	1,423	3,667	7,140	9,700	7,975	8,625	52	10,750	23,805	3,034
7	3,610	3,592	5,585	4,400	2,550	7,284	8,100	8,175	5,516	9,850	21,040	7,140
8	3,610	16	5,424	6,708	8,075	9,725	8,250	7,625	5,470	8,375	16,980	7,020
9	3,610	3,705	5,286	7,452	8,050	9,000	8,150	5,240	5,516	15,030	15,570	6,060
10	3,466	3,610	5,309	4,640	8,125	8,925	8,875	8,300	4,660	32,510	15,360	5,988
11	11	3,574	5,240	7,188	7,975	8,875	8,675	8,075	4,700	24,505	14,460	5,654
12	74	3,574	4,800	7,500	7,750	8,875	13,470	8,000	4,540	18,275	11,580	1,000
13	3,556	3,556	100	7,675	7,700	8,000	21,320	7,825	38	14,820	10,850	6,012
14	3,610	3,466	4,905	7,700	3,430	5,125	18,275	7,750	4,660	11,350	10,925	6,060
15	3,610	29	6,252	7,675	7,850	8,825	13,980	7,188	4,800	9,650	9,400	6,036
16	3,520	3,705	4,800	7,332	8,250	8,375	11,580	3,724	4,780	8,625	9,900	5,940
17	3,484	3,705	4,968	2,635	8,975	8,100	10,150	8,000	4,380	7,380	12,240	5,988
18	23	3,667	4,968	8,050	9,450	7,700	8,375	7,750	4,340	5,964	9,650	5,355
19	3,762	4,800	4,905	9,150	9,325	7,500	8,000	7,068	4,300	7,308	9,000	63
20	3,648	5,772	142	13,080	8,325	6,852	9,125	6,780	1,856	6,252	8,200	5,654
21	3,705	5,700	4,000	14,520	6,012	3,840	8,875	6,900	4,968	5,892	7,500	5,447
22	3,705	225	4,360	11,430	5,820	7,925	8,650	6,852	5,355	5,820	4,640	5,585
23	3,724	5,700	4,300	8,950	8,275	7,700	8,325	2,980	5,240	5,700	7,875	5,820
24	3,520	6,060	4,240	6,660	8,125	7,750	7,875	6,900	5,148	5,309	10,725	7,260
25	16	5,940	116	8,675	10,575	7,750	4,680	6,660	5,125	4,220	12,090	6,900
26	3,705	165	2,635	8,275	28,350	7,800	8,500	6,684	5,585	6,060	9,575	2,550
27	3,629	3,556	132	8,375	37,060	7,700	8,450	6,540	50	5,988	9,525	7,260
28	3,648	3,574	4,200	8,075	23,105	5,263	8,625	6,420	5,286	9,175	8,875	6,060
29	3,705	246	4,160	7,800	.....	7,875	8,175	5,892	4,800	8,000	5,424	6,132
30	3,705	5,010	4,060	7,380	.....	7,875	7,950	2,305	4,800	8,375	7,800	6,060
31	3,556	.....	4,040	3,160	.....	7,775	.....	2,095	.....	8,325	6,972	.....

NOTE.—Discharge determined from six rating curves applicable as follows: 1848 to 1887, 1888 to 1892, 1893 to 1896, 1897 to 1898, 1899 to 1907, and 1908 to 1915. The curve for the period 1908 to 1915 was determined from the discharge of the river at various gage heights; other curves were derived from this curve by making corrections for differences of elevation of river bed at Hunts Falls a short distance below the gage. These curves have been checked at several points by records of the quantity of water used by the mills. Figures presented in the table show 10-hour flow only, no figures being given for Sundays or holidays previous to 1903 when the mills were not in operation, and those given for later years have not been used in the computations of monthly discharge.

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1848.			
January	13,350	6,075	8,410
February	7,860	5,240	6,343
March	17,280	4,900	8,910
April	17,340	6,790	9,758
May	20,900	6,500	11,971
June	12,560	4,900	6,943
July	6,600	4,160	5,022
August	9,525	4,100	4,876
September	5,950	4,020	4,688
1848–49.			
October	11,800	4,700	6,595
November	14,980	5,240	6,984
December	11,025	5,950	8,087
January	9,100	5,060	6,680
February	6,125	4,560	5,345
March	26,600	4,820	8,709
April	25,100	7,600	10,371
May	15,220	6,700	8,102
June	10,150	4,700	6,318
July	4,820	4,240	4,474
August	14,590	4,140	6,132
September	5,060	4,120	4,530
The year	26,600	4,120	6,860
1849–50.			
October	15,550	4,480	6,991
November	32,700	6,500	11,782
December	7,700	5,910	6,599
January	8,125	5,600	6,630
February	16,625	6,125	9,644
March	14,590	7,075	9,060
April	29,400	8,075	13,817
May	40,150	12,010	19,815
June	17,820	6,650	9,876
July	14,980	5,400	7,180
August	10,625	4,900	6,814
September	13,350	5,320	7,904
The year	40,150	4,480	9,680
1850–51.			
October	13,525	4,740	6,300
November	8,660	5,060	5,924
December	9,950	5,500	6,498
January	7,125	5,280	5,672
February	19,400	5,450	11,024
March	14,150	7,550	9,624
April	20,185	9,275	13,383
May	11,350	5,650	8,953
June	9,525	5,240	6,590
July	6,930	3,590	5,298
August	5,140	3,340	4,622
September	4,480	3,790	4,205
The year	20,185	3,340	7,340
1851–52.			
October	7,025	4,060	4,717
November	21,825	5,160	8,703
December	7,650	5,200	6,099
January	17,400	5,790	8,629
February	11,450	5,600	7,079
March	16,485	5,790	9,685
April	71,000	9,000	21,655
May	18,490	7,225	12,734
June	8,720	4,860	6,089
July	5,790	4,360	4,781
August	7,740	4,280	4,845
September	8,275	4,440	5,142
The year	71,000	4,060	8,350
1852–53.			
October	5,600	4,740	5,016
November	16,890	5,400	7,768
December	10,850	6,225	8,184
January	9,725	5,690	6,864
February	32,200	5,600	11,985
March	15,400	7,700	9,974
April	17,220	8,840	11,672
May	25,900	7,325	10,339
June	10,390	4,740	6,286
July	4,780	4,400	4,603
August	6,930	4,780	5,476
September	9,425	3,340	5,995
The year	32,200	3,340	7,850
1853–4.			
October	19,645	5,060	7,718
November	24,100	5,750	10,560
December	7,860	5,240	6,077
January	10,625	5,400	6,855
February	7,500	5,710	6,226
March	21,220	7,325	10,493
April	26,400	7,175	13,415
May	38,800	8,275	16,884
June	8,420	5,240	6,334
July	5,320	4,520	4,874
August	4,780	4,440	4,612
September	5,950	4,400	4,932
The year	38,800	4,400	8,250
1854–55.			
October	5,400	4,660	4,942
November	19,645	4,860	8,322
December	9,325	5,830	6,847
January	17,400	5,650	8,670
February	17,750	6,750	10,220
March	9,050	6,600	7,118
April	33,600	10,050	18,294
May	14,350	5,750	8,997
June	13,200	5,650	8,092
July	7,325	5,060	6,013
August	6,420	4,980	5,456
September	5,400	4,940	5,040
The year	33,600	4,660	8,170
1855–56.			
October	22,900	5,060	10,088
November	10,730	6,600	7,795
December	11,620	5,950	7,348
January	7,500	6,075	6,662
February	6,930	5,060	6,246
March	6,340	4,900	5,475
April	21,965	5,600	12,839
May	14,800	7,400	9,263
June	7,740	5,280	6,367
July	5,400	4,400	4,940
August	17,995	4,480	8,826
September	9,325	5,650	6,438
The year	22,900	4,400	7,690
1856–57.			
October	11,450	5,790	6,576
November	6,300	5,500	5,915
December	8,275	5,710	6,659
January	8,780	5,870	7,464
February	22,700	6,700	12,391
March	14,860	6,175	8,509
April	26,900	8,025	14,671
May	30,100	9,900	14,544
June	10,270	5,790	7,983
July	8,600	5,200	6,001

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1856–57—contd.			
August	11,450	5,400	7,149
September	9,100	4,560	5,507
The year	30,100	4,560	8,610
1857–58.			
October	24,900	4,060	7,605
November	10,000	6,340	8,099
December	11,740	5,790	8,034
January	13,470	6,125	8,666
February	8,460	4,980	6,235
March	15,100	4,900	7,516
April	11,300	7,600	8,641
May	11,860	7,700	9,091
June	10,625	5,710	7,027
July	6,420	5,140	5,486
August	6,340	5,140	5,495
September	24,300	5,200	6,939
The year	24,900	4,060	7,400
1858–59.			
October	8,900	5,400	6,361
November	10,625	5,600	7,150
December	7,975	5,400	5,997
January	10,625	5,550	7,157
February	7,900	6,300	6,819
March	42,400	6,300	16,997
April	23,650	10,625	14,092
May	13,925	6,810	10,611
June	11,250	5,950	7,611
July	8,125	5,060	5,815
August	5,710	4,900	5,024
September	7,500	4,820	5,209
The year	42,400	4,820	8,240
1859–60.			
October	5,500	4,980	5,149
November	9,275	4,560	5,800
December	8,560	5,950	6,929
January	8,420	5,600	6,571
February	10,760	5,425	6,666
March	16,325	7,100	9,541
April	8,660	5,690	7,144
May	6,400	5,040	5,487
June	6,830	5,060	5,725
July	5,790	5,000	5,208
August	7,150	4,960	5,590
September	9,525	4,960	6,649
The year	16,325	4,560	6,370
1860–61.			
October	7,125	5,970	6,348
November	15,460	6,030	9,174
December	10,525	6,225	7,451
January	8,075	6,300	6,809
February	16,130	6,400	9,444
March	24,000	8,000	13,969
April	30,000	12,410	16,904
May	20,220	7,820	11,773
1866.			
March	11,375	5,690	7,613
April	14,225	7,700	9,895
May	11,375	5,710	6.667
June	12,225	5,120	6,992
July	6,500	4,360	5,070
August	6,175	4,820	5,272
September	8,400	4,540	5,714
1866–67.			
October	9,150	4,820	5,445
November	16,860	5,600	8,032
December	9,350	5,525	7,419
January	9,100	5,710	6,491
February	16,400	5,950	9,372
March	7,820	5,750	6,587
April	27,000	7,925	14,463
May	17,160	8,600	11,223
June	13,110	5,750	7,556
July	5,950	4,720	5,193
August	19,575	5,000	8,279
September	6,890	4,800	5,483
The year	27,000	4,720	7,960
1867–68.			
October	7,400	4,880	5,367
November	8,400	5,060	6,073
December	7,600	5,320	6,018
January	7,050	5,280	5,951
February	6,300	5,280	5,775
March	20,900	5,060	10,163
April	18,030	7,950	10,356
May	30,000	7,840	14,068
June	14,065	6,300	9,289
July	5,670	4,700	5,060
August	5,525	4,740	5,019
September	17,925	4,760	8,433
The year	30,000	4,700	7,630
1868–69.			
October	9,150	5,690	6,377
November	14,500	7,125	9,466
December	8,900	5,575	6,628
January	7,700	5,340	6,326
February	7,475	5,400	6,241
March	22,950	5,525	8,178
April	33,600	15,100	20,606
May	15,130	8,460	11,540
June	8,275	5,670	6,581
July	7,450	4,760	5,568
August	5,080	4,540	4,852
September	7,250	4,460	4,967
The year	33,600	4,460	8,110
1869–70.			
October	45,900	5,200	14,169
November	14,410	5,550	7,473
December	17,190	5,600	8,717
January	34,400	9,325	13,250
February	29,000	7,100	10,067
March	18,250	6,400	8,683
April	58,400	16,890	26,102
May	13,200	6,525	9,531
June	6,250	5,240	5,693
July	7,050	4,660	5,133
August	4,860	4,360	4,672
September	4,960	3,940	4,549
The year	58,400	3,940	9,840
1870–71.			
October	5,140	4,300	4,668
November	6,225	4,660	5,141
December	6,950	4,700	5,307
January	6,400	4,600	5,249
February	11,250	4,600	5,816
March	22,900	7,050	10,033
April	9,950	7,100	8,155
May	21,545	5,550	9,477

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1870–71—contd.			
June	6,950	5,040	5,517
July	5,060	4,320	4,723
August	6,150	4,300	4,785
September	6,400	4,320	4,797
The year	22,900	4,300	6,140
1871–72.			
October	11,680	4,300	5,506
November	19,575	4,860	7,712
December	9,850	4,840	6,371
January	8,750	5,020	6,192
February	5,750	4,880	5,210
March	5,930	4,820	5,292
April	27,400	5,710	13,562
May	13,500	6,440	8,169
June	16,025	5,790	8,684
July	6,600	4,980	5,525
August	15,490	4,929	7,389
September	11,275	5,970	7,759
The year	27,400	4,300	7,280
1872–73.			
October	10,330	6,175	7,745
November	15,730	7,375	9,604
December	8,520	5,890	7,050
January	13,020	6,275	7,911
February	8,250	6,100	6,792
March	10,450	5,930	6,474
April	27,550	12,960	18,763
May	19,575	8,250	11,985
June	6,810	4,800	5,763
July	6,100	4,800	5,095
August	7,175	4,900	5,128
September	6,830	4,800	5,253
The year	27,550	4,800	8,130
1873–74.			
October	26,100	4,960	9,218
November	8,500	5,870	6,695
December	12,900	5,770	7,647
January	30,800	5,890	11,191
February	12,250	6,500	8,261
March	14,410	6,625	8,752
April	13,320	6,400	9,166
May	20,325	11,530	13,598
June	17,280	6,320	9,047
July	17,925	5,600	8,911
August	7,250	5,220	5,779
September	5,525	4,520	5,031
The year	30,800	4,520	8,610
1874–75.			
October	6,010	4,960	5,284
November	5,750	4,860	5,090
December	5,770	4,560	5,230
January	6,250	4,640	5,242
February	8,350	5,200	5,848
March	9,525	5,475	6,700
April	31,700	7,475	14,947
May	13,750	7,700	10,100
June	12,275	4,900	6,558
July	5,600	4,920	5,174
August	7,125	5,020	5,526
September	5,360	4,960	5,163
The year	31,700	4,560	6,740

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1875–76.			
October	6,275	5,140	5,438
November	12,350	5,850	7,923
December	7,780	5,340	6,103
January	10,075	5,575	6,746
February	8,025	5,625	6,672
March	31,750	5,500	13,758
April	29,000	12,775	16,573
May	23,200	8,400	12,848
June	11,300	5,500	7,031
July	6,175	4,900	5,287
August	5,910	4,740	5,206
September	5,380	4,400	4,957
The year	31,750	4,400	8,220
1876–77.			
October	5,450	4,740	5,117
November	6,700	4,800	5,622
December	5,650	4,840	5,218
January	5,850	5,280	5,531
February	5,670	5,080	5,287
March	41,500	5,120	12,573
April	16,730	9,225	12,369
May	11,325	6,050	7,700
June	6,380	5,020	5,615
July	7,425	5,140	5,676
August	11,500	5,000	6,261
September	6,050	4,780	5,238
The year	41,500	4,740	6,850
1877–78.			
October	8,900	4,600	6,731
November	17,855	6,320	10,118
December	13,500	6,050	8,313
January	9,475	5,475	7,312
February	10,210	6,030	7,405
March	16,920	5,930	12,052
April	30,100	9,575	12,975
May	32,700	5,830	11,391
June	10,300	5,320	6,706
July	6,125	5,000	5,342
August	9,100	5,340	6,047
September	5,730	4,760	5,309
The year	32,700	4,600	8,310
1878–79.			
October	8,100	4,520	5,162
November	14,440	4,900	7,257
December	49,600	7,450	14,560
January	7,375	5,575	6,211
February	14,500	5,400	7,438
March	11,800	6,600	7,922
April	21,965	8,075	14,343
May	24,600	6,075	11,577
June	10,940	5,650	7,113
July	7,400	4,960	5,588
August	10,850	4,880	5,040
September	7,400	4,840	5,365
The year	49,600	4,520	8,130
1879–80.			
October	5,240	4,860	4,974
November	8,520	4,800	5,772
December	12,825	5,300	7,150
January	13,925	5,240	6,944
February	13,675	6,075	9,258
March	13,020	6,340	8,652
April	18,190	6,675	9,007

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1879–80—contd.			
May	8,950	5,060	6,318
June	5,830	4,520	5,090
July	5,650	4,700	5,032
August	5,060	4,560	4,777
September	5,040	4,200	4,501
The year	18,190	4,200	6,460
1880–81.			
October	4,480	3,970	4,168
November	10,025	4,820	5,857
December	5,180	4,400	4,762
January	5,750	4,080	4,718
February	9,275	4,640	6,136
March	16,800	6,420	11,001
April	15,040	7,575	11,081
May	17,820	6,810	10,396
June	7,700	5,200	5,912
July	7,880	4,700	5,413
August	5,930	4,560	4,940
September	5,200	4,440	4,873
The year	17,820	3,970	6,600
1881–82.			
October	5,400	4,440	4,746
November	7,950	5,080	6,226
December	18,610	5,200	7,784
January	12,300	5,425	7,182
February	12,410	5,360	7,791
March	21,930	7,325	11,324
April	10,880	6,910	8,805
May	16,130	6,010	8,718
June	14,980	5,100	8,518
July	6,225	4,780	5,092
August	4,940	4,320	4,694
September	12,380	4,100	5,373
The year	21,930	4,100	7,190
1882–83.			
October	5,380	4,760	4,976
November	5,000	4,240	4,467
December	4,500	4,160	4,330
January	4,680	4,040	4,321
February	6,750	4,160	4,770
March	6,850	4,940	5,715
April	23,100	6,500	12,433
May	12,500	6,525	8,112
June	13,380	4,920	6,114
July	6,625	4,620	5,037
August	4,900	3,910	,443
September	4,960	3,270	3,670
The year	23,100	3,270	5,700
1883–84.			
October	5,770	3,545	4,346
November	6,320	4,380	4,944
December	4,980	4,000	4,587
January	7,000	4,840	5,390
February	12,200	5,040	7,723
March	33,800	5,425	11,402
April	30,800	12,100	16,742
May	12,150	7,975	9,160
June	6,500	4,660	5,325
July	4,920	4,340	4,706
August	6,810	4,500	4,776
September	4,880	3,320	4,081
The year	33,800	3,320	6,930

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1884–85.			
October	4,340	4,080	4,161
November	5,575	3,970	4,488
December	8,150	4,520	5,353
January	12,440	5,160	7,240
February	6,910	4,860	5,649
March	6,500	4,800	5,260
April	15,760	6,790	12,342
May	12,325	5,120	7,676
June	8,175	4,480	5,431
July	5,340	4,300	4,728
August	14,350	4,640	5,851
September	5,870	4,500	4,819
The year	15,760	3,970	6,080
1885–86.			
October	7,175	4,400	4,961
November	15,730	5,625	8,114
December	10,050	4,800	6,449
January	26,450	5,360	8,816
February	31,600	5,650	11,476
March	12,775	6,050	7,722
April	29,400	7,600	14,592
May	8,500	5,280	6,823
June	5,160	4,480	4,757
July	4,840	4,440	4,559
August	4,640	4,200	4,497
September	4,660	4,240	4,472
The year	31,600	4,200	7,270
1886–87.			
October	6,380	3,985	4,436
November	13,750	4,360	6,346
December	8,100	4,640	5,668
January	17,750	4,580	6,770
February	17,040	6,625	8,675
March	9,850	5,600	7,164
April	30,100	8,075	16,352
May	20,780	5,475	10,496
June	18,640	4,340	7,058
July	15,790	4,280	6,694
August	14,800	4,640	7,414
September	6,500	4,320	5,002
The year	30,100	3,985	7,670
1887–88.			
October	5,340	3,420	4,469
November	8,275	4,200	5,257
December	10,760	3,530	5,962
January	9,350	5,330	6,827
February	11,875	5,210	6,936
March	21,400	5,850	9,714
April	25,300	15,150	18,058
May	30,250	9,400	16,776
June	10,250	5,170	6,672
July	9,375	4,650	5,241
August	5,330	4,930	5,068
September	16,100	4,790	7,757
The year	30,250	3,420	8,230
1888–89.			
October	15,250	8,775	10,674
November	20,500	8,275	11,100
December	25,800	7,140	12,320
January	17,000	7,800	10,197
February	8,000	5,310	6,921
March	16,400	5,250	9,729
April	13,500	5,330	9,516
May	11,040	5,510	7,251

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1888–89—contd.			
June	9,725	4,850	6,569
July	9,400	4,810	5,465
August	9,900	4,850	6,093
September	9,150	4,750	5,758
The year	25,800	4,750	8,470
1889–90.			
October	11,475	5,270	7,011
November	16,750	6,080	8,825
December	16,700	6,375	10,963
January	9,850	6,325	7,823
February	15,750	6,160	8,710
March	18,050	6,590	12,010
April	18,600	10,580	13,736
May	18,500	7,740	11,935
June	10,950	5,290	7,559
July	6,350	4,810	5,191
August	10,460	4,310	5,151
September	17,400	5,190	8,054
The year	18,600	4,310	8,910
1890–91.			
October	23,700	6,000	10,470
November	12,025	6,750	8,495
December	7,080	5,250	5,735
January	15,000	5,370	8,818
February	21,000	7,540	10,909
March	32,000	9,600	17,900
April	24,450	9,900	16,560
May	9,900	5,350	7,434
June	7,740	4,750	5,698
July	5,700	4,690	4,871
August	6,200	4,350	4,710
September	4,850	4,175	4,501
The year	32,000	4,175	8,840
1891–92.			
October	4,430	3,980	4,214
November	5,650	3,850	4,340
December	13,050	4,350	5,449
January	18,900	5,410	9,070
February	6,160	4,850	5,386
March	9,400	4,750	6,737
April	13,800	5,010	7,558
May	20,550	5,050	9,236
June	10,800	4,490	6,320
July	11,590	4,350	5,830
August	15,300	4,310	5,545
September	7,925	4,235	5,150
The year	20,550	3,850	6,240
1892–93.			
October	4,490	3,650	4,149
November	17,300	4,060	6,544
December	5,650	3,650	4,514
January	8,660	4,990	6,184
February	11,750	5,300	7,299
March	20,350	6,050	10,839
April	18,200	11,340	14,940
May	36,200	9,075	18,129
June	9,075	6,130	7,172
July	6,350	5,010	5,676
August	8,750	4,100	5,395
September	8,325	4,610	5,851
The year	36,200	3,650	8,060

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1893–94.			
October	11,400	4,950	6,773
November	8,400	6,090	6,786
December	9,550	5,925	7,529
January	8,000	6,275	7,061
February	8,250	5,900	6,781
March	20,400	6,200	12,341
April	17,100	9,100	11,007
May	15,270	6,350	8,504
June	12,890	5,825	8,038
July	7,050	5,440	6,141
August	5,750	4,390	5,152
September	7,925	4,490	5,740
The year	20,400	4,390	7,650
1894–95.			
October	6,990	4,850	5,864
November	8,040	5,990	6,907
December	7,400	5,700	6,667
January	6,890	5,500	6,257
February	6,725	5,500	5,847
March	10,675	5,300	7,569
April	66,700	8,450	18,943
May	10,350	6,500	8,222
June	7,340	5,600	6,225
July	7,075	4,890	6,337
August	6,890	4,890	6,082
September	6,350	4,690	5,498
The year	66,700	4,690	7,530
1895–96.			
October	12,950	4,810	7,401
November	16,700	7,050	10,668
December	16,500	7,750	10,481
January	20,550	7,050	8,943
February	23,200	7,100	10,082
March	73,400	8,870	18,918
April	26,000	9,750	16,372
May	9,325	6,050	7,379
June	8,080	5,460	6,726
July	7,925	4,810	5,439
August	5,380	4,040	4,948
September	7,800	3,940	6,280
The year	73,400	3,940	9,470
1896–97.			
October	10,500	4,750	6,717
November	18,200	5,850	7,538
December	8,040	4,190	6,108
January	10,450	7,000	7,425
February	12,300	7,150	8,819
March	19,200	7,000	12,344
April	24,100	12,950	18,048
May	26,200	9,200	12,352
June	35,900	8,650	14,185
July	41,100	8,500	14,292
August	11,250	8,550	10,190
September	9,950	6,100	7,156
The year	41,100	4,190	10,430
1897–98.			
October	7,400	4,850	5,971
November	12,100	5,050	8,358
December	33,600	7,500	11,915
January	10,600	6,800	8,190
February	10,400	7,350	8,607
March	33,000	8,450	17,452
April	27,500	10,400	14,992

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1897–98—contd.			
May	15,700	8,050	11,172
June	10,900	6,750	8,315
July	7,100	4,550	5,438
August	7,600	4,400	5,437
September	6,750	3,700	4,946
The year	33,600	3,700	9,230
1898–99.			
October	12,350	4,600	7,085
November	18,000	5,200	8,960
December	15,200	6,450	8,415
January	13,050	8,500	10,379
February	9,500	7,100	8,213
March	19,500	9,050	13,306
April	38,800	14,950	26,696
May	25,100	7,300	12,229
June	7,300	5,900	6,523
July	7,050	5,800	6,629
August	6,900	5,150	5,817
September	6,450	4,400	5,348
The year	38,800	4,400	9,970
1899–1900.			
October	6,000	4,350	4,896
November	7,150	5,100	5,950
December	7,300	5,200	5,962
January	9,150	4,250	5,952
February	48,000	6,700	16,743
March	34,600	10,050	15,804
April	36,100	12,000	19,440
May	19,500	8,200	11,465
June	9,200	4,700	6,575
July	6,100	4,300	4,856
August	6,200	3,950	4,515
September	4,950	3,050	4,137
The year	48,000	3,050	8,860
1900–1901.			
October	6,750	4,400	5,341
November	15,700	4,550	7,576
December	17,200	5,000	8,542
January	7,200	5,450	6,141
February	6,300	4,700	5,137
March	25,600	4,700	10,650
April	66,400	11,800	26,076
May	28,700	9,350	15,502
June	18,600	5,700	9,235
July	6,750	3,400	5,667
August	12,050	5,650	6,972
September	6,700	4,650	5,796
The year	66,400	3,400	9,390
1901–2.			
October	13,450	4,850	6,702
November	7,000	5,300	6,267
December	37,700	5,500	11,531
January	22,700	6,650	10,802
February	11,950	6,300	7,600
March	55,600	13,900	24,681
April	36,400	10,000	16,644
May	24,800	7,100	11,144
June	8,700	5,850	7,432
July	7,650	5,700	6,834
August	9,550	5,350	6,660
September	8,200	5,100	6,470
The year	55,600	4,850	10,200

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1902–3.			
October	25,800	7,200	9,670
November	12,700	7,000	8,160
December	21,000	6,550	9,621
January	11,500	7,550	8,991
February	14,150	8,500	10,211
March	42,400	14,700	26,692
April	24,300	7,150	15,144
May	7,300	3,050	5,238
June	34,800	4,900	12,119
July	9,550	5,900	7,296
August	7,250	5,400	6,369
September	6,550	4,800	5,446
The year	42,400	3,050	10,400
1903–4.			
October	8,250	4,800	6,402
November	7,350	1,600	6,071
December	9,750	5,150	6,371
January	6,700	5,250	5,731
February	6,900	5,350	5,781
March	31,700	6,200	11,863
April	44,600	12,100	19,492
May	34,000	9,050	16,080
June	9,050	5,200	6,944
July	6,900	4,100	5,472
August	7,800	4,500	5,481
September	9,200	4,350	5,502
The year	44,600	1,600	8,430
1904–5.			
October	7,900	5,300	6,367
November	6,400	4,900	5,642
December	5,900	3,700	4,508
January	8,250	4,900	6,337
February	6,100	4,650	5,043
March	40,600	4,550	12,052
April	40,500	8,250	15,083
May	8,350	5,450	7,148
June	9,050	5,050	6,400
July	7,100	4,600	5,470
August	7,150	4,600	5,517
September	20,500	6,550	9,768
The year	40,600	3,700	7,440
1905–6.			
October	6,700	5,550	6,148
November	7,400	5,500	6,384
December	15,300	6,500	7,890
January	24,700	6,950	9,107
February	10,450	6,300	7,413
March	17,600	6,000	9,039
April	35,400	9,400	16,321
May	38,400	6,900	11,027
June	20,700	7,400	11,519
July	10,450	6,300	7,532
August	10,800	5,050	6,244
September	6,100	4,250	4,729
The year	38,400	4,250	8,610
1906–7.			
October	6,750	4,300	5,180
November	7,650	4,550	6,338
December	7,150	4,800	5,860
January	9,750	6,550	7,841
February	7,100	5,400	6,248
March	17,900	5,250	8,575
April	25,400	8,250	13,006
May	17,200	7,250	9,971

Monthly discharge of Merrimack River at Lowell, Mass., for the years ending Sept. 30, 1848–1861; 1866–1915—Continued.

Month.	Discharge in second-feet for 10 hours.		
	Maximum.	Minimum.	Mean.
1906–7—contd.			
June	10,800	5,900	7,650
July	7,300	4,350	6,204
August	6,300	2,600	4,611
September	13,450	4,550	5,960
The year	25,400	2,600	7,290
1907–8.			
October	23,300	6,450	9,959
November	34,500	8,250	14,348
December	24,600	6,750	10,462
January	16,105	6,540	10,494
February	25,030	5,940	9,734
March	24,365	7,750	13,882
April	21,005	10,550	14,186
May	20,655	8,500	13,699
June	14,340	4,800	7,934
July	8,125	4,400	5,947
August	10,800	4,800	6,326
September	5,820	3,430	4,711
The year	34,500	3,430	10,100
1908–9.			
October	4,300	3,376	4,026
November	5,010	4,060	4,456
December	5,424	4,500	4,876
January	10,850	4,100	6,333
February	16,980	5,355	8,890
March	24,715	7,625	10,921
April	40,510	12,360	19,245
May	14,250	7,750	10,924
June	8,750	5,700	7,472
July	6,300	4,360	5,172
August	4,905	3,900	4,502
September	5,585	2,805	4,123
The year	40,510	2,805	7,580
1909–10.			
October	7,140	3,920	4,706
November	6,420	3,466	4,408
December	6,948	4,080	5,409
January	20,970	3,304	7,035
February	9,450	6,420	7,613
March	27,470	10,425	16,845
April	21,005	5,940	12,464
May	12,180	7,260	8,696
June	9,450	5,401	7,411
July	5,240	4,160	5,485
August	8,000	2,805	4,889
September	6,108	3,250	4,561
The year	27,470	2,805	7,460
1910–11.			
October	4,140	2,771	3,778
November	6,108	3,070	4,756
December	6,012	2,686	3,432
January	8,000	4,340	5,836
February	6,300	4,400	5,103
March	21,705	4,660	8,194
April	20,935	9,200	13,727
May	15,510	3,960	8,897
June	7,875	4,640	6,112
July	5,424	2,230	3,582
August	5,240	2,944	3,880
September	6,300	4,340	5,111
The year	21,705	2,230	6,030
1911–12.			
October	11,250	5,562	7,426
November	9,550	7,380	8,153
December	16,280	7,525	8,780
January	8,375	6,420	7,422
February	8,625	4,600	6,639
March	24,680	6,420	13,067
April	29,910	12,240	18,817
May	13,980	9,900	11,343
June	15,030	4,968	8,552
July	6,132	4,300	5,168
August	7,500	4,760	5,903
September	7,380	4,800	6,111
The year	29,910	4,300	8,950
1912–13.			
October	13,410	4,720	6,419
November	13,650	7,260	8,562
December	9,250	6,900	8,133
January	12,480	8,325	9,729
February	9,075	6,372	7,780
March	39,542	7,825	15,359
April	23,350	9,300	13,090
May	15,780	6,612	9,056
June	11,490	5,240	7,216
July	5,240	3,743	4,565
August	4,340	2,926	3,704
September	8,125	3,196	4,412
The year	39,542	2,926	8,170
1913–14.			
October	10,150	4,000	6,784
November	13,860	6,948	8,252
December	9,850	7,500	8,198
January	9,125	5,470	7,015
February	9,900	6,252	7,820
March	30,630	9,775	15,150
April	29,230	15,000	21,311
May	25,485	8,150	13,885
June	8,300	5,539	6,799
July	7,428	4,905	5,675
August	5,988	4,540	5,055
September	6,060	3,629	4,699
The year	30,630	3,629	9,220
1914–15.			
October	3,762	3,466	3,621
November	6,060	3,466	4,200
December	6,252	2,635	4,803
January	14,520	3,667	7,561
February	37,060	6,492	10,196
March	17,680	6,852	8,990
April	21,320	7,092	9,806
May	11,300	5,892	7,691
June	6,420	4,300	5,140
July	32,510	5,194	9,474
August	23,805	6,972	11,422
September	7,260	5,355	6,248
The year	37,060	2,635	7,430

MERRIMACK RIVER AT LAWRENCE, MASS.

LOCATION.—At the dam of the Essex Co. in Lawrence.

DRAINAGE AREA:

	Square miles.
Total of Merrimack River basin above Lawrence	[1] 4,663
Net drainage area, excluding the diverted basins of Nashua and Sudbury rivers and Lake Cochituate	[1] 4,452

RECORDS AVAILABLE.—January 1, 1880, to September 30, 1915.

COMPUTATIONS OF DISCHARGE.—Accurate record is kept of the flow over the dam and through the various wheels and gates. This flow includes the water wasted into the Merrimack from the Nashua, Sudbury, and Cochituate drainage basins. Estimates of the quantity wasted from these basins are furnished by the Metropolitan Water and Sewerage Board of Boston and subtracted from the weekly and monthly quantities measured at Lawrence to obtain the net flow from the net drainage area of 4,452 square miles.

EXTREMES OF DISCHARGE.—Maximum discharge for 24 hours recorded 1880–1915: 82,150 second-feet, March 3, 1896. A view of a flood stage at the Lawrence dam in August, 1914, is given in Plate X, *A* (p. 180).

DIVERSIONS.—Practically the entire flow of South Branch of Nashua River, Sudbury River, and Lake Cochituate is diverted for use by the metropolitan water district of Boston.

REGULATION.—Flow regulated to some extent by storage in Lake Winnepesaukee. Low-water flow affected by operation of various power plants above Lawrence.

STORAGE.—There are several reservoirs in the basin. It is estimated that the water surface is about 3.5 per cent of the entire drainage area.

ACCURACY.—Records are obtained with great care and are considered good. Those for the later years are probably more accurate than those for the earlier years.

COOPERATION.—Entire record has been revised and furnished by R. A. Hale, principal assistant engineer of the Essex Co. The figures published herewith supersede all that have been presented in previous publications. The record was changed to the climatic-year form by engineers of the Geological Survey.

[1] See footnote to tables of weekly discharge.

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1879-80.												
1	2,700	3,570	15,680	5,240	20,600	17,840	6,080	8,280	3,100	2,690	1,430	2,690
2	2,690	2,110	9,050	5,330	20,600	19,830	6,360	14,000	4,020	2,570	3,240	2,610
3	2,670	3,240	7,070	5,470	15,310	18,220	6,940	10,920	4,460	2,610	2,760	2,450
4	2,570	2,810	6,300	4,490	11,560	15,350	8,920	8,800	4,210	1,260	2,860	2,450
5	1,170	2,570	5,870	5,370	9,910	15,500	19,300	8,040	3,800	2,890	2,840	55
6	3,220	2,480	5,710	5,350	9,240	18,430	27,690	8,460	2,710	4,650	2,720	2,630
7	2,720	2,560	5,600	5,500	9,110	19,460	27,620	8,120	3,880	3,550	3,200	2,580
8	2,600	2,490	10,590	5,700	7,810	19,110	18,830	7,560	3,550	3,070	1,990	2,610
9	2,570	1,070	18,830	5,370	8,750	15,460	15,000	6,310	3,590	2,760	3,380	2,420
10	2,570	3,640	12,570	5,030	7,560	12,220	12,220	6,300	3,780	2,740	2,860	2,480
11	2,560	3,780	9,320	4,520	6,480	10,820	10,260	5,090	3,810	1,000	2,860	2,450
12	1,280	4,160	8,300	5,200	5,710	9,410	9,300	5,530	3,690	2,960	2,770	55
13	3,210	4,900	8,540	5,200	6,250	8,230	8,300	5,360	2,530	2,870	2,740	2,400
14	2,650	6,820	7,180	5,520	12,540	7,760	7,600	4,900	4,170	2,840	2,740	2,430
15	2,570	9,470	6,870	5,490	18,400	8,300	7,470	4,560	3,700	2,690	460	2,360
16	2,390	7,160	6,250	5,140	21,650	7,500	7,110	4,240	3,400	2,720	2,830	2,300
17	2,390	7,550	6,700	4,980	19,360	7,580	7,490	4,800	3,230	2,740	2,690	2,390
18	2,440	6,480	5,850	4,250	15,940	7,370	10,980	3,960	3,100	1,080	2,740	2,340
19	910	6,060	4,840	5,180	16,400	6,700	12,870	4,100	2,770	3,100	2,700	3,130
20	2,800	5,340	4,800	4,820	19,950	7,010	10,960	3,830	1,560	2,860	2,490	3,000
21	2,560	5,340	4,850	5,250	17,910	7,380	10,460	4,260	3,270	3,130	2,490	2,600
22	2,500	4,460	5,160	5,680	13,630	7,920	10,620	4,170	3,000	3,020	560	2,440
23	2,510	2,640	4,640	5,680	12,680	7,950	10,090	3,990	2,940	4,640	3,130	2,500
24	2,550	4,430	4,080	7,100	8,250	8,200	9,050	4,330	2,740	4,400	2,700	2,450
25	2,390	3,760	2,480	8,670	9,050	8,100	8,280	3,700	2,700	3,430	2,610	2,370
26	980	3,940	5,740	9,020	8,750	6,700	7,800	3,570	2,600	4,070	2,740	370
27	3,060	2,200	5,700	8,000	8,570	6,040	7,200	3,380	220	3,380	2,610	2,500
28	2,550	4,020	3,700	11,370	9,110	6,370	7,040	3,220	3,330	3,290	2,590	2,610
29	2,570	3,850	4,800	20,940	9,950	6,500	7,330	3,100	2,940	2,880	1,080	2,300
30	2,490	7,240	4,430	25,050	.....	6,030	7,180	1,860	2,690	2,860	3,090	2,270
31	2,940	.....	6,690	21,830	.....	5,920	.....	3,520	.....	2,750	2,690	.....

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1880-81.												
1	2,064	9,594	2,848	2,034	2,746	6,836	9,532	17,318	6,645	5,452	4,622	2,133
2	1,699	10,131	2,777	273	2,585	10,794	9,839	14,806	6,067	4,826	3,720	2,259
3	60	6,000	2,769	2,174	2,455	12,797	10,459	12,762	5,461	3,754	3,814	2,662
4	2,402	4,245	2,458	2,415	2,605	19,860	10,457	12,308	5,577	3,564	4,350	1,147
5	2,137	3,390	1,307	2,396	2,191	20,040	9,387	10,858	5,345	3,887	3,847	3,080
6	2,088	3,037	3,461	2,202	717	15,930	8,816	9,918	5,711	3,553	2,732	3,059
7	1,924	4,560	3,275	2,151	2,789	22,640	7,698	10,091	5,063	3,275	2,429	2,825
8	1,916	7,862	3,189	1,870	2,695	19,110	8,363	10,583	4,893	3,012	3,411	2,679
9	1,955	7,700	3,168	385	2,578	16,000	8,193	10,778	4,751	2,587	3,212	2,829
10	52	5,207	3,058	2,878	2,571	20,350	9,563	10,609	4,949	1,507	3,419	2,791
11	2,004	3,998	2,582	2,909	2,390	25,560	12,219	11,099	6,304	3,273	3,357	783
12	1,860	3,608	1,140	2,462	3,040	29,420	18,052	14,727	8,130	3,101	3,142	2,987
13	1,873	4,491	3,313	2,509	5,754	28,560	19,275	17,456	8,351	2,695	3,497	2,960
14	1,862	4,146	3,172	2,610	10,207	25,500	18,505	15,324	6,979	2,570	1,386	2,804
15	1,853	4,348	3,026	2,458	10,378	21,840	18,728	12,069	6,418	2,348	2,626	3,042
16	1,576	3,450	3,105	1,352	9,535	19,750	19,796	11,330	6,107	2,639	2,762	2,903
17	52	3,499	3,103	3,028	8,645	19,020	19,176	19,923	5,381	822	2,451	3,050
18	1,818	3,183	2,828	2,967	7,529	17,918	19,400	28,258	4,897	2,303	2,370	854
19	2,119	2,722	1,121	2,716	6,655	16,545	20,181	26,301	4,066	2,684	2,329	2,921
20	1,890	3,358	3,289	2,702	5,757	15,843	19,934	25,355	4,683	2,415	2,353	2,648
21	1,889	2,538	3,021	2,704	6,109	16,676	19,497	23,812	4,069	2,552	910	2,399
22	1,870	3,674	2,685	2,487	5,410	17,791	19,705	20,074	3,969	2,466	2,359	2,246
23	1,917	2,833	2,623	1,113	5,255	18,053	20,930	17,851	4,039	2,628	2,830	2,307
24	66	3,164	2,546	3,119	5,230	16,713	20,455	15,404	3,726	739	2,494	2,791
25	2,644	1,778	1,084	2,976	4,976	14,743	21,499	13,267	3,333	2,963	2,359	833
26	2,672	3,552	1,764	2,749	4,413	13,097	23,682	11,385	2,391	3,105	2,455	2,707
27	2,824	3,035	3,111	2,496	3,756	11,726	22,894	9,405	3,823	6,369	2,941	3,348
28	2,587	1,603	2,982	2,710	5,201	8,682	20,792	7,823	3,845	8,267	983	3,164
29	2,530	3,398	2,727	2,438	.....	9,544	19,623	7,062	4,089	6,545	2,435	2,651
30	2,326	3,227	2,405	1,229	.....	9,322	19,275	7,183	4,871	6,549	2,686	2,527
31	426	.....	2,178	2,915	.....	9,628	.....	6,566	.....	4,397	2,347	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1881–82.												
1	2,530	4,257	4,083	21,734	7,521	8,380	12,707	8,208	16,138	3,593	2,702	2,122
2	519	4,598	6,237	15,769	6,791	13,180	10,914	7,656	14,420	3,129	2,420	1,668
3	2,800	4,382	9,300	9,282	6,454	24,975	11,065	7,375	16,173	4,270	2,218	358
4	2,705	4,173	7,843	6,309	6,036	35,030	11,747	7,127	12,848	3,724	2,330	2,302
5	2,449	4,932	7,046	7,282	5,204	33,070	12,312	6,662	14,733	4,726	2,370	2,340
6	2,448	6,306	6,007	7,617	5,457	28,680	13,657	6,155	19,408	4,177	784	2,349
7	2,431	5,574	5,824	7,565	4,851	26,280	14,329	6,013	16,446	4,046	2,515	2,027
8	2,877	4,791	6,029	7,010	4,993	23,680	13,348	6,063	13,355	3,890	2,684	2,157
9	876	5,219	6,363	7,613	5,000	19,152	12,200	5,493	11,370	3,087	2,426	1,858
10	2,646	7,164	5,897	8,364	5,169	18,172	13,531	6,522	9,844	3,833	2,404	535
11	2,552	7,471	3,820	8,641	5,409	20,186	12,930	7,667	8,644	3,478	2,192	2,254
12	2,372	6,224	4,052	8,219	4,918	19,932	11,775	7,764	8,449	3,123	2,642	2,548
13	2,375	4,606	3,641	7,766	5,647	18,570	10,465	7,697	7,384	3,362	825	2,575
14	2,312	5,795	3,985	7,096	6,348	16,326	9,513	8,033	6,368	3,301	2,696	2,510
15	2,466	6,047	5,020	6,152	8,560	14,506	8,892	10,128	5,991	3,484	2,679	2,314
16	725	5,800	5,461	6,769	13,800	12,710	7,764	12,198	5,718	3,302	2,459	2,820
17	2,363	5,076	4,722	6,064	15,900	12,058	8,397	12,926	5,326	3,883	2,167	784
18	2,709	4,638	3,910	5,508	19,200	11,415	8,259	10,836	4,868	3,360	2,458	2,818
19	2,526	4,752	4,889	5,102	18,277	10,467	8,889	9,417	5,811	2,943	1,582	2,789
20	3,375	6,440	4,768	5,145	18,342	11,123	9,755	8,488	7,573	2,946	502	2,513
21	4,146	8,518	4,598	4,865	16,080	11,209	11,860	8,977	10,606	2,950	2,358	2,310
22	3,267	7,362	4,509	4,486	13,463	11,627	12,529	11,534	9,692	3,193	2,466	2,346
23	1,946	6,320	4,735	4,814	11,801	11,315	10,717	12,793	7,456	1,249	2,430	1,951
24	3,344	4,331	9,105	4,508	10,971	10,576	9,688	14,167	5,887	2,831	2,166	5,711
25	2,801	4,875	16,865	4,199	10,309	9,812	8,348	19,157	4,436	3,042	2,221	16,636
26	2,409	4,108	11,080	4,271	9,513	8,542	7,494	16,333	5,016	2,455	2,065	14,747
27	2,489	3,316	9,440	5,120	9,668	8,324	6,909	14,098	4,009	2,410	783	9,850
28	2,966	4,477	14,240	7,204	9,086	9,619	7,049	12,424	4,295	2,170	2,398	6,764
29	3,546	3,827	24,260	8,489	.....	14,534	7,493	15,132	4,236	2,247	2,428	5,296
30	1,259	3,638	23,600	9,121	.....	15,647	7,629	24,069	3,899	749	2,368	4,237
31	3,075	.....	29,295	8,305	.....	14,604	.....	21,448	.....	2,462	1,957	.....
1882–83.												
1	3,092	2,482	2,489	2,681	2,364	3,857	6,350	8,066	6,443	2,167	2,456	1,273
2	3,952	2,512	2,267	2,602	2,554	3,728	6,780	7,476	6,071	3,384	2,455	143
3	3,206	2,658	782	2,440	2,311	3,668	6,490	7,105	5,248	3,065	2,645	1,996
4	3,074	3,182	2,584	2,332	756	3,040	6,740	7,182	5,443	1,194	2,286	1,908
5	3,175	796	2,566	2,125	2,641	4,350	5,880	7,738	4,306	3,442	1,249	1,804
6	3,124	2,913	2,454	2,018	2,624	3,996	8,490	8,320	4,496	3,252	2,958	1,817
7	3,326	2,832	2,182	465	2,566	3,575	11,080	8,820	4,592	3,493	2,582	1,813
8	1,064	2,423	2,277	2,452	2,510	3,367	13,000	12,280	4,762	2,706	2,385	1,216
9	3,253	2,329	2,326	2,303	2,537	3,260	12,300	10,200	4,945	3,537	2,410	30
10	3,112	2,411	852	2,301	2,292	3,064	13,060	10,000	3,997	3,232	2,275	1,775
11	2,532	2,612	2,606	2,178	890	1,860	16,300	8,460	4,802	2,806	2,202	1,683
12	2,443	696	2,739	2,031	2,756	3,499	19,900	7,700	4,310	2,810	514	1,692
13	2,586	2,332	2,602	1,785	2,747	3,272	21,900	8,070	5,827	2,778	2,563	1,529
14	2,918	2,598	2,498	145	2,597	2,785	30,000	7,740	6,121	2,222	2,078	1,497
15	1,240	2,508	2,519	2,321	2,353	2,760	30,500	6,510	5,171	2,607	2,096	48
16	4,101	2,519	2,236	2,173	2,502	3,051	28,111	6,690	4,500	4,259	2,114	34
17	3,819	2,568	769	2,002	2,122	3,085	25,603	7,400	3,401	4,928	1,953	1,500
18	3,823	3,245	2,741	1,995	2,142	2,317	25,394	6,890	4,220	6,303	1,311	1,552
19	3,789	1,055	2,707	1,937	4,707	4,054	23,260	6,160	3,453	4,946	41	1,556
20	3,873	3,129	2,517	1,904	4,579	4,684	20,818	4,870	3,291	4,424	1,898	1,519
21	3,623	3,005	2,136	460	4,418	4,385	21,041	6,080	5,289	3,748	1,813	1,564
22	2,907	2,456	2,235	2,615	4,342	4,178	20,057	5,530	14,522	2,589	1,931	301
23	3,900	2,423	1,997	2,578	4,063	4,060	17,044	8,820	8,779	3,619	2,054	553
24	3,700	2,443	704	2,408	3,797	3,613	14,293	15,230	5,014	3,078	2,056	1,574
25	3,409	2,532	1,385	2,278	2,965	4,950	12,681	16,121	4,837	2,677	1,424	1,383
26	3,220	923	2,754	2,313	4,276	5,300	11,509	13,453	3,463	2,547	284	1,608
27	2,929	2,226	2,776	2,078	4,017	5,530	10,579	10,315	3,723	2,484	2,062	1,497
28	2,770	2,385	2,548	561	3,996	6,140	9,667	9,173	3,684	2,389	1,973	1,195
29	1,351	2,484	2,544	2,557	.....	7,130	8,752	8,095	3,460	586	1,935	476
30	3,548	622	2,275	2,472	.....	7,250	8,480	7,404	3,045	2,832	1,966	36
31	3,217	.....	912	2,233	.....	6,980	.....	6,838	.....	2,818	1,940	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1883–84.												
1	1,442	5,780	3,435	4,118	4,348	8,280	28,940	16,400	7,620	3,222	2,302	2,470
2	1,777	4,678	2,238	4,182	4,441	8,240	25,030	14,390	7,000	2,539	2,081	2,940
3	2,295	3,883	3,343	4,163	4,036	8,370	21,800	13,630	5,530	2,344	362	2,799
4	2,094	2,302	2,601	3,976	4,844	7,380	22,360	12,800	5,770	1,230	2,811	2,657
5	2,062	3,539	2,596	3,999	4,533	7,167	23,860	13,080	5,490	1,637	2,793	2,226
6	1,896	3,039	2,578	3,010	4,199	6,669	20,910	12,120	5,170	2,154	2,237	2,229
7	738	2,646	2,532	4,068	5,481	6,512	20,350	12,250	4,480	3,318	2,257	638
8	2,654	2,641	2,597	3,438	6,830	6,382	20,230	11,460	4,060	3,014	2,340	2,350
9	2,448	2,559	1,731	4,173	7,495	5,804	21,000	10,760	4,890	2,542	2,174	2,348
10	2,357	2,897	3,365	5,942	7,157	6,408	22,420	10,020	3,710	2,467	780	2,204
11	2,073	530	3,055	7,789	7,171	6,086	24,660	10,360	4,213	2,309	3,023	1,925
12	2,110	2,967	2,717	8,306	6,449	6,228	26,120	11,820	4,776	2,142	2,688	2,135
13	1,628	2,899	2,805	7,206	6,166	7,953	26,150	10,920	4,921	553	2,617	1,546
14	87	2,619	2,702	6,852	6,789	11,121	26,270	10,000	4,212	2,837	2,299	140
15	2,119	2,570	2,370	5,891	8,834	13,266	25,250	10,550	3,527	2,474	2,389	2,367
16	1,903	2,739	704	5,291	10,150	13,240	26,730	12,480	4,349	2,272	2,009	2,344
17	1,852	2,232	2,818	4,824	9,828	12,751	35,640	10,920	3,527	2,280	514	2,328
18	2,136	201	2,607	4,383	11,579	11,659	39,100	11,590	3,406	2,396	2,465	2,302
19	2,103	2,664	2,479	3,995	14,633	10,883	41,100	10,850	3,546	1,830	2,624	2,043
20	2,149	2,646	2,432	3,135	16,597	10,986	38,050	9,120	3,350	554	2,445	1,160
21	406	2,533	2,260	4,375	16,815	11,845	35,580	10,050	2,698	2,725	2,415	38
22	2,213	2,393	1,831	4,164	17,145	12,200	32,490	17,180	2,315	2,756	2,290	2,169
23	2,169	2,232	207	3,481	16,983	14,240	29,340	16,180	3,530	2,403	1,661	2,274
24	2,457	2,028	1,748	3,727	14,915	19,210	25,000	12,880	3,235	2,402	957	2,252
25	2,109	634	146	4,267	15,663	24,720	22,510	13,630	2,772	2,407	3,186	2,099
26	1,926	3,602	1,720	4,339	13,515	29,100	22,180	12,590	2,929	2,485	2,605	2,027
27	1,739	3,456	2,180	3,968	11,678	36,190	20,880	11,570	3,229	1,126	2,459	1,394
28	426	4,169	2,218	4,876	10,779	42,200	21,930	9,590	3,561	3,233	2,203	266
29	3,053	4,409	2,281	4,303	9,606	46,600	21,190	9,930	1,307	2,932	2,206	2,486
30	3,243	4,556	2,370	4,111	.....	41,000	18,900	11,850	3,598	2,227	2,106	2,304
31	3,553	.....	4,340	4,171	.....	35,300	.....	8,600	.....	2,281	360	.....
1884–85.												
1	2,243	1,813	4,660	3,610	3,081	2,875	3,960	19,610	4,730	4,010	1,970	3,370
2	2,052	208	3,140	6,520	3,954	4,281	5,440	17,340	5,190	4,225	630	4,000
3	1,993	2,455	3,100	7,960	3,756	4,292	14,340	14,390	5,280	3,669	3,980	4,090
4	1,969	2,464	2,620	5,280	3,445	4,527	18,980	13,920	5,330	2,554	4,200	3,670
5	156	2,229	2,230	3,640	3,384	4,689	23,420	11,500	5,190	2,864	6,380	3,350
6	2,012	2,176	2,010	2,910	3,424	4,803	24,240	10,500	6,270	3,409	15,930	1,990
7	2,122	2,100	1,405	4,910	3,321	4,754	22,420	9,320	11,130	3,299	9,590	3,560
8	2,103	2,679	5,150	7,800	2,802	4,124	21,250	8,440	10,820	4,285	5,160	3,020
9	2,122	1,859	9,380	7,060	3,611	4,936	22,420	8,490	8,000	3,928	4,200	2,940
10	2,082	3,077	7,100	5,910	4,079	4,441	22,450	10,580	6,600	4,607	4,750	3,040
11	1,870	2,701	5,300	5,140	5,690	4,152	20,980	11,200	5,640	3,874	3,450	3,070
12	564	2,228	4,410	4,080	6,290	4,086	17,440	9,930	4,700	3,229	3,320	5,390
13	2,350	2,251	3,940	6,790	6,900	4,022	17,380	8,400	4,160	3,817	3,480	3,860
14	2,216	2,110	2,720	11,030	7,060	3,697	15,890	7,020	3,220	3,097	3,690	4,160
15	1,939	1,887	4,230	8,660	5,877	2,744	15,280	7,790	3,770	2,881	20,320	3,210
16	1,905	187	3,540	5,170	6,006	4,085	17,690	7,870	3,200	2,651	16,100	2,950
17	1,865	2,283	3,850	3,840	5,464	3,743	17,380	7,810	2,530	2,526	8,230	2,680
18	1,675	2,266	4,460	3,140	5,376	3,592	16,040	7,880	2,710	2,519	5,660	2,550
19	288	2,247	4,040	4,010	5,038	3,618	14,670	7,390	2,690	1,576	4,320	2,400
20	1,949	2,192	5,020	3,470	4,694	3,314	16,400	7,370	2,490	3,096	3,580	1,076
21	2,060	2,112	1,850	3,300	4,324	2,884	17,510	7,210	1,180	2,742	3,480	2,240
22	1,963	1,711	5,370	3,740	3,585	2,330	19,700	6,670	2,950	2,301	3,510	2,788
23	2,052	207	5,570	4,760	4,250	2,960	22,570	5,700	2,670	2,130	2,460	2,150
24	1,997	2,101	6,680	3,890	3,907	2,580	24,700	5,540	2,180	2,179	5,000	2,158
25	1,616	1,980	5,590	3,440	3,715	1,830	24,270	6,520	2,195	1,920	4,350	2,124
26	140	7,750	8,040	3,760	3,604	1,940	21,650	5,470	2,114	480	4,230	2,560
27	2,589	3,660	6,960	5,030	3,771	1,550	19,150	5,440	1,872	2,020	4,200	580
28	2,336	4,850	6,020	5,750	3,573	2,100	16,500	4,930	987	2,070	3,800	2,804
29	2,223	3,470	6,530	8,610	.....	3,450	15,900	4,210	3,269	2,110	3,260	2,704
30	2,197	2,480	5,480	6,280	.....	3,900	19,680	3,320	3,579	2,170	1,660	2,232
31	2,158	.....	5,790	5,350	.....	3,530	.....	3,220	.....	2,100	3,900	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1885–86.												
1	2,304	5,843	5,210	5,780	11,0[illegible]4	23,040	24,020	8,080	4,120	2,795	777	2,190
2	2,142	6,492	5,270	14,200	9,978	23,000	39,070	7,820	3,980	2,396	2,787	2,203
3	2,866	9,123	4,710	14,600	8,910	20,910	40,700	7,400	3,840	2,753	2,620	2,175
4	494	16,897	4,540	16,000	7,954	19,180	34,810	6,790	3,770	1,153	2,307	2,196
5	2,608	13,692	4,360	14,710	7,066	17,040	27,100	6,250	3,620	806	2,291	319
6	2,808	9,926	3,450	32,980	6,736	14,170	22,570	6,070	2,910	2,979	2,323	2,409
7	2,767	8,130	4,650	38,400	5,893	10,680	27,600	6,150	4,180	2,586	1,868	2,330
8	3,309	7,092	4,240	27,080	6,542	11,210	31,090	5,810	3,340	2,315	279	2,200
9	3,162	11,219	3,230	14,940	6,153	9,410	27,880	6,520	3,080	2,240	2,769	2,108
10	3,621	3,920	4,350	9,930	6,128	8,620	24,260	10,160	2,930	2,009	2,522	2,138
11	772	24,720	8,620	15,180	6,10[illegible]	7,660	23,100	9,910	2,800	495	2,387	1,537
12	3,433	19,060	14,170	16,400	7,192	7,330	23,500	8,600	3,278	2,159	2,334	137
13	3,816	13,500	11,200	16,100	22,150	6,680	22,270	8,460	1,372	1,897	1,984	2,274
14	2,92[illegible]	10,330	10,920	16,420	39,200	6,970	21,080	7,830	3,472	2,118	1,558	2,008
15	2,89[illegible]	8,740	13,370	11,210	46,100	7,210	22,370	7,090	3,366	2,366	235	2,058
16	3,178	7,830	13,830	13,570	43,300	7,020	25,120	7,010	3,396	2,340	2,253	2,060
17	4,265	6,690	10,9[illegible]	11,400	36,900	6,940	25,500	8,260	4,223	1,879	2,400	2,032
18	1,031	5,940	8,760	12,520	34,260	7,770	23,190	10,440	4,375	2,201	2,340	1,786
19	3,385	5,530	7,930	11,300	28,610	8,800	23,190	8,750	4,597	3,585	2,327	298
20	3,270	5,420	7,320	11,010	26,480	9,680	23,680	7,380	2,240	3,016	2,318	2,621
21	2,665	5,880	6,420	9,980	24,350	10,680	23,640	6,150	3,603	2,730	3,027	2,527
22	2,962	5,660	5,660	6,996	23,190	13,280	21,960	5,400	3,332	2,744	523	2,272
23	7,265	5,660	5,590	6,679	18,180	13,640	20,100	4,830	2,727	2,609	2,552	2,236
24	8,940	4,920	6,380	6,045	16,000	12,160	18,200	5,370	2,663	3,193	2,573	2,217
25	5,746	5,440	5,730	6,433	14,930	10,890	14,600	4,560	2,782	786	2,356	2,304
26	5,277	4,500	8,300	6,308	13,660	9,740	14,180	4,320	3,343	2,267	2,143	454
27	4,149	6,660	5,900	7,106	11,370	10,030	11,380	4,480	1,271	2,439	2,208	2,815
28	3,903	6,000	6,000	7,106	15,360	10,540	9,900	5,620	3,590	2,289	1,396	3,001
29	3,770	5,020	5,460	7,210	.....	13,840	8,790	5,570	3,088	2,113	132	2,460
30	4,037	5,750	5,060	8,893	.....	15,290	8,380	5,240	2,637	2,100	1,995	2,208
31	4,413	.....	4,870	10,071	.....	19,640	.....	5,140	.....	3,182	2,075	.....
1886–87.												
1	3,662	5,779	6,360	6,150	32,400	8,180	11,430	33,900	10,180	5,650	9,490	7,200
2	5,031	7,267	7,140	5,270	26,800	7,340	10,750	30,500	10,360	4,280	8,070	6,600
3	1,233	5,732	8,840	7,180	23,200	6,940	8,200	25,500	11,680	3,210	7,620	5,710
4	2,721	4,703	5,300	7,020	19,400	7,000	10,150	23,500	12,300	3,220	7,340	4,970
5	2,618	3,985	4,110	5,730	18,100	6,230	12,440	22,200	13,180	4,600	6,250	5,940
6	2,310	4,875	5,780	5,380	13,870	4,970	15,210	23,600	12,300	3,880	4,810	4,640
7	2,315	2,095	4,770	5,160	13,820	6,240	15,470	20,750	10,080	3,920	4,990	4,330
8	2,298	4,701	5,730	4,570	12,200	5,395	15,450	17,400	8,770	5,000	6,940	4,860
9	2,411	7,048	4,410	3,600	11,530	5,790	14,560	17,700	7,450	3,930	6,350	5,020
10	417	6,097	4,900	4,620	10,700	5,790	15,060	18,200	6,510	3,495	5,270	4,390
11	2,277	4,974	4,740	4,550	9,870	6,510	24,700	17,400	5,540	4,640	4,690	4,450
12	2,401	4,409	4,110	4,330	11,390	6,780	36,000	15,470	4,830	4,310	4,580	4,720
13	2,246	4,230	5,160	4,340	10,320	6,300	40,700	12,910	5,460	4,620	4,520	4,280
14	2,307	3,762	4,630	4,490	12,220	7,460	37,500	10,890	4,160	4,950	4,330	4,460
15	2,242	4,294	4,740	4,400	8,840	7,690	31,100	8,630	4,110	4,160	4,600	4,840
16	1,711	3,787	4,710	3,600	8,400	8,020	27,200	9,110	3,880	3,080	3,720	4,660
17	365	3,839	5,620	5,060	8,960	7,480	25,950	8,020	3,780	2,260	3,560	3,800
18	2,021	4,217	4,270	4,380	9,280	7,590	24,400	8,510	3,010	3,800	3,960	3,435
19	2,126	8,772	3,780	4,340	11,220	7,530	22,300	8,090	1,255	3,440	9,660	4,170
20	2,291	21,930	5,530	4,310	12,530	8,300	20,400	7,610	4,000	3,060	12,550	3,500
21	2,295	14,140	5,510	4,340	14,450	10,530	19,550	6,565	3,530	3,295	9,460	3,230
22	2,122	10,460	5,350	4,360	12,780	11,690	19,950	5,610	3,000	3,440	8,900	3,530
23	1,595	7,580	5,100	3,350	11,090	12,150	21,300	6,460	3,350	2,530	11,050	3,445
24	53	7,310	4,730	4,900	9,660	10,630	22,200	4,490	5,760	4,930	13,320	2,620
25	2,109	7,880	4,420	8,480	10,250	10,630	25,800	4,870	25,550	21,200	19,250	1,750
26	2,315	12,500	9,100	13,690	9,750	10,390	28,800	4,720	22,000	23,000	22,200	3,420
27	2,044	11,500	11,400	16,400	7,350	8,840	27,400	9,140	14,460	21,000	18,650	3,160
28	2,064	9,040	10,690	15,590	9,710	10,580	26,000	10,160	10,750	15,200	12,750	2,960
29	2,200	7,720	8,760	15,800	.....	13,170	24,300	11,040	8,040	11,870	10,840	2,970
30	1,677	6,340	7,260	23,500	.....	12,980	31,400	12,940	6,530	11,150	8,580	2,850
31	3,284	.....	8,090	33,600	.....	12,030	.....	12,360	.....	9,780	7,660	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1887–88.												
1	2,010	3,310	7,870	6,339	4,040	15,500	27,100	38,800	12,000	3,100	2,770	1,810
2	960	2,800	4,690	8,882	3,990	13,400	27,400	37,000	11,910	4,420	2,690	550
3	3,790	2,850	3,580	9,942	4,020	12,300	28,200	31,400	10,260	3,090	2,650	2,600
4	3,620	2,740	3,710	11,081	2,740	3,340	26,600	25,400	9,660	1,930	1,730	3,280
5	4,110	1,880	5,230	11,149	2,750	5,420	24,100	22,400	8,020	3,920	140	2,970
6	4,210	600	4,860	9,689	4,470	4,610	26,200	19,000	7,460	3,440	2,590	2,850
7	4,120	2,970	5,550	8,686	4,410	4,300	32,200	19,400	6,935	2,330	2,790	2,710
8	3,150	3,040	5,420	7,842	4,480	4,070	33,200	19,900	5,570	430	2,770	1,850
9	2,380	2,790	4,960	7,776	4,525	3,920	30,650	20,400	6,540	3,250	2,770	440
10	3,930	2,690	3,910	6,827	4,340	3,610	26,400	21,600	5,260	3,080	2,690	3,180
11	3,450	2,820	4,280	6,336	3,055	1,760	24,400	24,500	6,140	2,700	1,800	4,020
12	3,315	2,080	8,530	5,821	2,880	3,600	24,000	25,800	4,560	2,700	350	3,750
13	3,360	3,260	14,420	5,779	4,340	5,560	24,250	31,000	4,620	2,640	3,230	3,510
14	3,360	4,330	11,940	5,481	4,070	4,050	24,000	37,400	4,410	1,700	3,500	3,400
15	2,530	3,950	9,560	5,433	4,180	3,000	22,000	33,800	4,385	730	3,550	2,320
16	880	4,840	8,790	6,176	3,990	3,030	21,250	28,800	3,900	3,410	4,010	510
17	3,470	7,910	7,480	5,735	4,070	3,350	21,200	24,400	3,510	3,130	3,610	3,320
18	3,160	7,700	6,170	5,553	2,840	1,860	21,850	21,000	4,860	2,720	2,740	3,450
19	2,850	5,670	6,690	5,472	2,750	3,510	23,400	18,550	3,490	2,760	1,440	4,240
20	2,800	4,940	4,940	5,613	4,170	3,060	22,800	15,080	3,680	2,790	3,290	10,250
21	2,880	6,440	5,590	5,675	11,600	3,520	24,600	14,920	3,720	1,750	3,300	8,900
22	2,730	6,800	5,290	5,227	14,700	13,800	23,350	13,670	3,680	460	3,070	15,170
23	3,480	6,050	4,840	6,302	19,500	20,100	22,650	12,840	2,880	2,900	3,070	21,400
24	4,710	3,620	4,240	5,443	22,300	25,600	23,000	12,100	2,130	3,060	3,070	18,500
25	3,820	5,420	3,770	4,401	22,500	23,600	23,000	11,820	4,040	2,700	2,650	13,370
26	3,770	4,210	3,510	4,467	19,600	20,200	20,550	11,455	3,520	2,770	1,180	11,430
27	3,700	4,170	4,550	4,580	21,300	18,200	20,200	9,680	7,270	2,710	3,240	15,640
28	3,480	5,860	4,350	4,253	19,900	18,800	21,200	10,270	5,720	1,720	3,140	21,450
29	2,500	6,640	6,090	3,562	18,400	20,800	23,800	10,180	6,200	220	2,730	15,870
30	775	10,180	7,180	5,113	.....	23,200	33,600	12,510	3,830	2,610	2,695	11,310
31	3,480	.....	8,300	4,283	.....	27,400	.....	13,470	.....	2,700	2,740	.....
1888–89.												
1	9,780	12,640	24,500	11,930	8,100	4,300	9,910	13,460	4,240	3,940	9,960	1,140
2	9,560	11,080	19,600	11,320	7,250	3,730	9,860	11,480	4,300	2,940	10,260	2,860
3	13,550	10,400	18,000	10,500	6,840	3,540	10,620	9,780	6,740	2,920	11,420	3,070
4	13,840	8,880	14,900	9,840	8,580	4,840	10,180	8,280	11,580	1,240	9,420	2,510
5	11,870	10,340	13,700	9,040	6,360	5,460	12,220	6,950	9,160	3,800	9,580	2,540
6	10,030	9,840	12,800	8,260	6,780	11,150	13,100	7,920	7,780	3,400	8,500	2,500
7	9,290	9,200	11,820	11,630	6,290	20,000	11,300	6,420	7,100	3,500	7,770	1,610
8	17,100	8,370	10,800	14,310	7,390	22,400	11,980	6,140	5,840	4,000	6,910	380
9	20,800	8,280	9,330	19,000	6,140	19,800	11,220	5,990	5,600	3,320	5,530	3,070
10	17,300	10,040	10,270	18,000	5,930	14,320	11,150	5,700	7,020	2,900	4,440	2,710
11	13,220	15,420	9,570	23,000	7,360	13,000	11,430	4,810	7,020	2,800	3,940	2,630
12	11,450	19,000	10,650	21,000	5,920	11,220	11,300	4,560	9,400	2,810	5,110	2,600
13	10,680	17,150	10,360	15,080	5,700	10,030	11,480	5,570	8,420	1,910	4,230	2,560
14	9,630	13,600	7,640	13,580	5,920	10,130	11,020	4,500	7,120	1,450	4,070	1,640
15	11,120	11,870	6,350	11,740	6,120	10,740	11,320	4,540	5,330	3,450	4,360	1,400
16	11,050	12,910	5,595	10,210	5,120	10,540	9,800	5,000	4,620	3,300	4,840	3,240
17	10,160	17,150	8,620	9,870	4,880	8,780	9,400	4,710	5,380	2,670	4,540	3,000
18	10,770	14,990	22,100	15,160	6,680	10,080	9,240	3,920	4,940	2,760	4,300	2,730
19	12,320	13,320	35,000	20,400	6,830	10,060	9,700	3,300	4,540	2,810	4,870	4,300
20	12,050	13,060	32,300	14,200	7,610	11,850	11,320	4,240	4,550	2,280	4,100	6,900
21	11,040	14,780	24,500	11,200	7,020	12,930	11,700	4,390	4,140	2,700	3,760	9,230
22	11,430	13,600	18,100	8,740	6,580	12,180	13,130	7,820	2,980	11,090	3,740	6,870
23	10,340	11,530	14,440	9,740	6,100	11,600	11,580	12,700	2,400	7,130	3,590	6,270
24	9,700	9,560	13,000	9,520	4,800	10,700	9,580	10,700	3,780	5,280	2,600	5,770
25	11,650	8,150	10,930	9,910	5,480	12,500	8,030	7,870	3,440	4,540	2,240	4,680
26	13,910	8,330	12,700	10,080	5,100	13,220	6,940	5,700	2,740	3,800	3,690	4,150
27	18,050	11,160	12,980	8,680	4,440	12,200	8,060	6,510	3,040	2,980	3,340	3,920
28	11,080	22,450	14,830	9,300	4,280	11,130	12,960	5,200	3,100	2,450	2,710	2,980
29	13,020	29,850	18,100	8,700	.....	10,420	17,350	6,160	2,150	4,620	2,640	3,290
30	17,750	28,900	15,400	8,800	.....	10,520	17,390	5,740	3,240	4,330	2,550	4,390
31	14,870	.....	13,650	8,400	.....	8,780	.....	5,260	.....	4,750	1,620	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1889-90.												
1	3,310	7,200	20,050	7,550	4,090	21,000	14,200	11,980	12,880	3,480	3,280	9,550
2	3,450	5,870	15,440	8,380	4,070	20,900	13,560	11,930	10,980	2,520	3,020	8,490
3	6,680	5,020	13,100	9,080	4,360	17,700	11,630	12,930	9,100	2,580	770	6,480
4	6,730	8,160	11,980	10,480	3,750	13,640	12,820	10,900	8,420	900	2,910	5,410
5	4,830	17,700	9,420	9,810	4,320	12,730	19,000	11,680	7,850	5,060	2,980	4,720
6	3,790	12,720	7,730	9,020	6,090	11,950	23,200	17,900	9,130	6,470	2,300	4,040
7	5,210	10,400	8,330	8,410	7,370	8,150	22,750	22,000	12,960	5,340	2,240	3,350
8	8,770	8,230	7,380	9,080	6,460	8,490	22,100	24,500	13,900	3,770	2,170	4,920
9	13,700	6,760	9,590	9,080	11,220	10,150	22,200	20,250	12,000	3,460	2,120	3,990
10	10,480	5,790	17,450	5,950	13,210	9,170	22,400	15,280	9,620	3,400	795	4,260
11	8,070	6,730	23,000	5,550	10,650	8,600	22,900	12,500	8,380	3,120	1,800	4,610
12	6,250	5,530	20,000	5,150	8,600	8,580	22,400	15,070	7,620	2,940	2,280	5,120
13	5,710	5,420	19,500	4,800	7,230	10,520	19,400	14,480	7,270	620	1,920	5,530
14	7,250	5,460	15,520	5,280	6,570	17,340	20,050	12,480	9,940	3,300	1,920	6,960
15	6,850	6,090	11,560	5,780	6,650	20,600	21,900	11,920	11,410	3,100	1,940	13,670
16	6,490	5,800	10,440	6,330	8,560	19,500	24,350	15,280	10,260	2,340	1,880	13,720
17	5,530	4,830	9,680	8,490	8,960	19,300	22,400	14,860	9,010	2,300	590	12,550
18	5,020	5,590	10,130	8,040	8,170	16,170	19,100	14,190	8,160	2,440	2,110	15,260
19	4,060	4,330	11,360	8,340	6,500	14,800	17,100	11,880	7,160	2,320	2,330	22,990
20	3,480	5,270	15,500	7,120	5,900	12,700	13,470	10,430	6,190	620	2,310	19,300
21	4,930	8,560	18,950	6,880	4,650	12,380	13,440	11,680	5,660	2,260	2,440	14,700
22	3,980	11,010	15,100	8,130	5,050	12,960	12,720	17,300	4,550	2,640	2,650	10,720
23	3,540	12,290	14,640	7,700	3,900	17,600	12,340	13,460	5,560	2,330	2,910	8,740
24	3,660	11,720	13,030	6,040	6,810	25,200	12,290	10,950	4,340	2,360	950	7,680
25	3,570	10,910	10,560	5,460	6,560	23,450	13,150	9,580	4,000	2,460	6,220	6,660
26	2,730	9,070	13,440	4,510	8,480	20,400	14,160	8,740	4,400	2,340	8,060	5,830
27	2,260	8,070	13,840	7,350	16,700	20,300	11,860	7,980	4,510	4,760	6,480	5,440
28	4,450	8,560	12,050	4,700	21,300	20,700	13,100	15,590	4,150	6,560	5,700	5,180
29	5,180	22,400	9,150	4,400	.....	19,500	13,340	22,100	2,850	4,830	12,700	6,610
30	8,820	23,800	9,990	4,280	.....	15,840	13,000	18,000	4,160	4,100	8,960	5,440
31	8,270	.....	8,960	4,440	.....	15,370	.....	15,000	.....	3,270	6,840	.....
1890-91.												
1	5,000	14,300	6,820	7,600	12,000	25,800	24,200	10,600	5,620	3,070	2,460	3,830
2	4,900	13,380	4,850	7,420	13,720	21,900	21,700	9,640	4,980	2,590	950	3,510
3	4,550	11,580	4,310	7,520	13,800	18,000	22,900	9,210	5,220	2,810	3,310	3,230
4	4,480	10,730	4,380	6,750	14,640	15,300	22,300	9,970	5,680	1,750	3,240	2,880
5	4,760	10,210	4,470	8,120	15,160	13,060	21,500	9,760	6,440	2,690	2,450	2,880
6	6,780	9,290	4,760	7,560	12,890	13,200	21,000	9,430	7,600	3,610	2,240	1,800
7	5,840	8,850	4,400	7,410	11,800	13,080	19,600	8,500	6,310	3,230	2,170	2,690
8	5,700	8,460	6,240	7,000	10,130	13,300	18,500	7,810	5,810	3,310	2,170	3,700
9	6,480	7,740	5,120	6,540	11,370	11,750	17,100	7,150	4,520	3,390	770	3,380
10	7,540	8,080	5,010	6,090	9,730	13,900	15,780	6,690	4,040	3,510	2,070	3,330
11	7,290	7,200	4,870	4,760	10,850	23,300	17,000	7,020	4,040	3,610	2,740	2,940
12	6,340	7,640	4,820	8,820	10,850	27,900	17,900	6,680	3,820	2,360	2,140	2,730
13	6,340	7,600	5,090	11,320	9,950	27,800	28,100	7,660	3,570	3,670	2,100	1,690
14	5,180	7,100	4,180	15,260	9,660	30,800	31,700	7,150	2,430	3,170	2,145	3,280
15	5,170	6,840	5,190	21,300	7,870	32,500	29,900	6,480	3,630	2,280	2,000	2,960
16	5,480	6,290	4,880	15,700	8,260	30,800	30,300	6,360	3,270	2,310	640	2,370
17	7,170	7,150	4,700	13,560	9,270	25,100	29,600	7,400	2,540	2,340	2,220	2,290
18	15,500	8,100	5,120	12,700	11,980	21,600	26,600	11,270	2,870	3,050	2,860	2,410
19	21,800	13,700	6,950	12,200	14,600	20,000	24,900	9,640	3,100	800	2,550	2,300
20	25,600	15,260	9,340	11,020	15,520	18,100	26,800	7,950	4,340	3,360	2,180	605
21	31,450	12,430	7,000	10,210	13,820	15,620	27,500	6,990	3,820	4,040	2,180	2,290
22	29,600	10,560	7,920	9,850	13,520	17,600	24,200	6,160	4,650	3,840	2,000	2,540
23	24,000	9,020	6,150	15,600	13,540	28,200	20,600	6,320	4,440	3,350	870	2,360
24	19,300	8,380	5,660	24,900	11,660	38,100	20,200	6,410	5,890	3,070	4,220	2,450
25	18,400	7,100	3,660	32,200	12,890	41,200	20,900	6,510	6,380	2,790	3,280	2,300
26	19,500	7,140	6,960	31,700	20,600	39,000	15,470	5,170	5,280	730	3,150	2,290
27	19,300	5,040	13,560	24,200	28,100	33,200	13,770	5,190	4,680	3,600	2,880	580
28	17,000	7,290	11,350	20,700	29,800	27,600	12,380	4,650	3,190	3,130	2,800	2,230
29	13,700	5,530	13,010	17,100	.....	24,100	11,700	4,540	4,400	2,840	2,640	2,160
30	13,100	4,130	12,160	14,070	.....	24,700	11,480	4,570	3,700	2,840	3,710	2,310
31	14,480	.....	10,820	13,060	.....	25,600	.....	4,890	.....	2,600	5,120	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1891-92.												
1	2,230	620	3,160	11,490	7,170	5,035	9,380	5,170	10,130	9,960	3,045	8,260
2	2,280	2,160	2,300	6,980	5,100	5,610	9,640	5,400	9,610	9,500	3,020	6,550
3	2,320	2,180	2,310	6,230	5,040	8,740	10,630	4,410	8,260	8,100	2,790	5,550
4	450	2,210	2,580	19,100	4,890	13,510	13,320	5,350	7,250	6,510	2,800	4,520
5	2,200	2,250	2,850	15,520	5,100	4,050	16,600	7,400	6,100	13,030	2,760	3,460
6	2,320	2,230	2,230	9,340	5,270	3,790	16,500	9,600	6,445	12,980	1,850	4,410
7	2,280	2,130	6,960	5,300	4,050	4,580	14,560	8,040	4,940	9,890	505	3,700
8	2,290	280	5,170	4,360	5,170	4,350	15,960	6,070	5,765	7,610	2,980	3,800
9	2,300	2,070	4,330	4,140	4,540	4,840	12,610	5,820	5,160	5,560	3,105	3,815
10	2,170	2,250	3,650	3,670	4,180	6,710	10,850	4,750	4,970	4,725	2,735	3,020
11	475	2,210	3,460	4,360	4,450	10,210	9,780	4,300	4,155	5,590	2,760	765
12	2,340	2,180	3,170	3,170	5,650	12,360	8,280	4,540	3,640	4,280	2,690	3,590
13	2,400	2,210	2,000	3,200	5,710	10,720	7,370	5,200	4,980	3,845	1,880	3,395
14	2,410	2,190	3,420	4,810	5,290	10,230	6,630	7,330	3,800	3,800	4,975	2,900
15	2,540	400	3,140	12,700	3,960	7,430	5,940	7,850	3,750	3,600	6,115	3,125
16	2,350	2,600	2,580	20,400	3,540	6,940	5,700	8,830	3,720	2,815	4,940	6,960
17	2,230	2,600	2,690	14,500	4,130	6,180	4,720	10,050	3,590	1,170	3,920	7,280
18	585	2,250	2,740	10,560	4,480	5,800	5,780	10,260	3,540	3,520	3,530	4,755
19	2,320	2,300	2,120	9,820	3,390	5,260	4,820	8,240	2,960	3,345	3,380	5,140
20	2,420	2,640	760	10,780	2,720	4,640	4,410	7,120	4,570	2,895	2,360	3,700
21	2,260	3,000	3,270	11,610	1,890	5,660	4,410	7,700	3,760	2,950	1,330	3,545
22	2,350	1,700	2,830	9,540	3,040	4,500	4,430	13,110	3,070	2,850	3,770	3,480
23	2,350	2,980	2,410	7,460	2,900	4,480	5,020	21,600	3,760	1,940	3,415	3,240
24	2,680	2,950	2,540	7,640	2,900	5,450	5,920	24,800	3,590	640	3,120	2,370
25	1,360	2,140	2,070	8,740	3,270	7,770	6,580	24,500	3,620	2,760	2,760	565
26	2,580	4,480	6,960	7,300	3,570	8,380	5,660	20,100	2,980	2,880	2,690	3,480
27	2,620	5,400	7,770	5,920	3,980	9,420	5,040	16,650	11,070	2,805	3,965	3,265
28	2,380	3,940	9,060	7,020	4,550	10,590	4,660	14,740	10,040	2,805	18,770	3,030
29	2,340	3,000	7,870	6,090	4,830	10,180	4,645	15,290	11,220	2,805	21,600	3,300
30	2,290	4,520	6,980	5,720	.....	10,180	4,645	12,390	14,120	1,960	14,680	3,355
31	2,120	.....	14,130	6,780	.....	9,640	.....	10,610	.....	360	10,820	.....
1892-93.												
1	2,285	2,880	4,230	710	2,423	4,024	11,270	14,530	6,845	2,865	2,592	6,246
2	435	2,820	4,035	3,597	2,466	4,074	12,420	15,620	6,500	1,660	2,316	4,122
3	2,880	2,415	3,305	6,762	2,427	3,898	15,740	16,900	5,560	2,540	2,196	3,229
4	3,010	2,915	3,540	6,869	1,726	3,523	15,220	20,700	5,240	2,070	2,166	3,138
5	2,950	1,995	4,460	5,218	1,142	3,096	14,200	39,000	6,030	3,665	1,454	3,987
6	2,420	2,820	3,795	4,111	3,091	4,281	14,130	44,800	4,595	3,480	435	2,611
7	2,415	4,385	3,480	3,374	2,708	3,918	15,690	37,800	4,660	2,675	2,729	2,155
8	1,930	3,655	3,700	3,051	2,689	3,695	14,700	29,450	5,000	1,730	2,660	2,777
9	340	3,410	4,295	4,268	3,506	3,811	13,300	21,900	4,825	1,545	2,283	1,714
10	2,905	5,765	4,740	3,411	4,889	4,234	17,190	19,300	3,885	3,380	1,836	2,229
11	2,865	5,720	5,080	3,057	8,176	4,545	18,800	17,800	3,115	3,255	2,284	3,723
12	2,390	4,465	5,830	2,767	9,553	5,891	17,520	18,200	4,570	2,680	1,703	2,667
13	2,380	3,580	4,320	2,734	11,493	9,442	17,900	18,350	3,480	2,750	1,721	2,975
14	2,350	5,180	4,190	1,940	9,147	14,031	19,100	17,500	4,550	2,800	3,168	2,304
15	1,980	3,970	4,095	1,622	7,564	22,158	18,800	19,420	4,320	1,805	2,314	2,599
16	290	4,060	3,945	3,282	7,120	25,808	20,100	18,200	3,955	305	2,286	1,530
17	2,960	12,440	3,385	3,083	6,958	24,558	19,200	18,800	3,140	3,140	1,985	1,211
18	2,900	21,900	2,640	2,769	6,460	21,010	17,400	30,000	3,495	2,800	2,345	3,561
19	2,430	17,500	4,310	2,760	5,680	16,824	15,250	32,600	4,410	2,700	1,295	3,425
20	2,430	14,690	3,845	2,470	6,274	14,315	14,080	24,450	3,795	2,690	811	3,304
21	950	13,840	3,680	1,959	4,994	12,129	14,100	18,700	3,600	2,665	2,955	3,275
22	1,850	10,700	3,455	751	4,725	11,132	15,550	16,900	3,540	1,700	2,515	2,945
23	225	8,795	3,640	3,060	4,530	10,426	15,370	14,850	3,720	310	3,331	1,751
24	3,110	4,990	3,445	2,355	4,418	9,400	15,830	13,320	3,460	2,590	2,436	1,390
25	2,860	6,870	2,970	2,559	3,649	9,660	14,970	12,300	4,200	2,650	3,429	3,215
26	2,415	4,815	2,650	2,129	3,277	12,840	14,900	11,620	5,160	2,605	2,713	2,577
27	2,480	4,200	5,255	2,504	4,442	16,200	14,080	9,730	4,420	2,615	4,078	2,739
28	2,370	5,610	4,240	1,878	4,325	15,250	12,010	8,150	4,160	2,600	4,466	2,193
29	1,880	4,160	3,985	768	.....	14,200	13,620	9,000	4,060	1,670	2,932	2,423
30	230	4,280	3,735	3,003	.....	12,150	12,460	7,500	3,825	970	4,042	1,430
31	3,195	.....	3,555	2,612	.....	11,890	.....	7,230	.....	3,140	6,554	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1893–94.												
1	1,188	6,290	7,010	4,490	2,850	6,220	7,000	9,450	15,150	2,183	2,199	1,412
2	3,030	5,180	5,380	3,680	2,950	5,020	9,080	8,000	12,900	3,393	2,007	174
3	2,633	4,530	4,540	2,880	2,490	4,700	9,100	8,080	10,020	2,698	2,066	161
4	2,282	3,350	5,180	2,760	1,000	3,100	9,080	8,580	14,220	762	1,459	1,589
5	2,244	2,900	4,490	2,650	2,900	6,680	8,650	7,920	14,400	3,628	255	1,768
6	2,197	4,810	4,280	2,630	2,700	8,080	9,100	5,500	11,950	3,273	2,524	1,780
7	1,486	4,060	4,900	3,000	2,730	13,950	8,880	7,620	10,200	2,018	2,447	1,894
8	286	3,140	5,355	4,220	1,820	22,400	6,720	7,400	9,130	1,509	2,225	1,347
9	2,513	3,500	4,410	3,410	2,000	27,900	9,120	7,680	8,000	3,712	2,031	104
10	2,582	3,490	4,060	3,200	2,010	26,130	8,220	6,900	5,050	3,031	1,933	1,773
11	2,330	2,540	5,900	3,220	1,200	21,350	8,650	6,320	5,790	2,491	1,285	1,824
12	2,324	1,690	4,460	2,700	3,040	20,430	9,600	5,400	4,335	2,340	200	1,828
13	2,241	3,720	4,280	4,800	4,640	20,000	10,500	2,880	4,240	2,367	2,130	2,164
14	1,389	3,490	5,990	1,000	3,780	19,650	10,580	4,870	4,035	1,562	2,182	2,853
15	853	2,880	5,000	3,910	2,500	19,080	9,000	3,530	3,880	1,086	2,038	1,759
16	4,881	2,880	3,970	3,160	4,520	16,580	11,900	3,260	2,790	3,162	1,979	594
17	4,641	2,805	3,580	2,775	4,090	14,580	11,380	3,580	2,500	2,807	1,958	3,133
18	3,852	1,970	6,600	2,990	2,380	11,900	11,800	3,480	3,900	2,622	1,368	2,457
19	3,245	1,430	5,680	2,950	4,940	13,550	9,450	2,540	3,260	2,207	257	2,218
20	2,918	3,460	5,860	2,880	4,490	14,500	10,400	2,905	2,885	2,205	1,829	2,186
21	1,736	3,240	6,290	1,500	7,320	18,320	10,580	6,350	2,900	1,480	2,074	1,872
22	1,072	2,700	4,960	2,790	7,320	17,600	13,320	6,200	4,350	223	2,078	1,398
23	3,544	2,780	3,815	2,800	7,020	15,700	20,880	6,200	3,165	3,213	1,806	3,074
24	3,128	3,680	3,240	2,110	9,600	16,050	19,700	5,680	2,700	2,371	1,694	4,063
25	3,560	3,280	3,370	2,310	6,390	13,400	17,620	6,550	4,175	2,562	1,229	2,946
26	11,180	2,900	6,140	2,750	8,520	14,300	16,200	10,250	3,500	2,325	193	2,128
27	7,900	3,960	7,665	3,000	8,120	13,300	14,320	10,030	2,880	2,263	1,687	2,233
28	5,400	3,060	8,445	2,000	6,350	11,900	12,100	10,300	2,920	1,445	1,790	2,431
29	5,690	2,850	7,910	3,300	.....	10,200	9,000	9,200	3,455	436	1,793	1,516
30	11,380	4,420	6,420	2,830	.....	9,900	10,620	10,980	2,310	2,573	1,876	258
31	8,320	.....	6,045	5,000	.....	9,170	.....	19,130	.....	2,667	1,947	.....
1894–95.												
1	2,869	2,515	1,990	2,534	2,787	2,481	8,160	9,950	4,701	4,274	2,615	166
2	2,126	2,647	1,296	2,567	1,904	1,609	6,820	9,814	3,462	3,211	2,627	493
3	2,144	2,429	3,492	2,630	1,579	1,595	6,740	9,155	4,572	3,316	1,781	2,974
4	2,161	3,045	2,991	2,425	3,432	3,381	6,920	8,198	4,021	1,592	1,096	2,537
5	2,009	5,818	2,818	1,826	2,985	3,377	8,190	7,629	3,308	4,045	3,409	2,428
6	1,409	5,935	2,727	710	2,815	3,560	7,740	8,305	3,812	1,883	2,757	2,315
7	209	5,196	2,570	3,233	2,619	3,247	7,140	8,557	4,040	1,577	2,529	1,587
8	2,055	4,864	1,801	2,526	2,302	3,193	9,320	8,596	3,685	3,877	2,247	203
9	2,206	4,170	1,140	2,470	1,743	2,909	10,080	7,994	3,371	2,590	2,273	2,216
10	2,275	3,481	3,490	2,544	884	3,327	25,400	6,632	4,292	2,785	1,734	2,273
11	2,433	2,961	2,811	2,905	3,205	4,785	39,200	5,735	3,546	3,325	409	2,241
12	2,047	4,209	2,625	1,849	2,577	5,030	33,600	5,083	3,046	3,515	3,050	1,925
13	1,863	3,852	2,639	1,884	2,546	4,618	24,100	5,693	2,992	2,028	2,609	2,079
14	2,180	2,856	3,096	3,951	2,413	5,683	19,600	7,189	2,682	1,801	2,419	1,670
15	3,561	3,447	4,290	3,951	2,391	7,866	40,300	7,875	1,889	4,018	2,305	310
16	3,133	3,438	4,777	3,681	1,639	9,053	65,300	6,726	1,968	3,002	2,175	2,292
17	3,589	2,625	5,198	3,631	877	8,124	54,702	6,052	3,699	2,841	1,456	1,951
18	2,964	2,704	4,746	3,488	3,199	7,962	34,512	5,378	2,928	2,611	540	2,267
19	2,591	4,326	4,633	2,371	2,621	6,903	25,905	4,399	2,519	2,602	3,283	2,111
20	1,888	4,043	4,264	3,590	2,542	6,439	22,190	5,477	2,212	1,817	3,132	1,965
21	1,126	3,638	3,956	3,968	2,608	6,380	19,604	4,135	2,471	681	2,661	1,453
22	3,390	3,536	2,731	3,203	2,354	6,380	17,865	4,300	1,801	3,435	2,668	81
23	2,789	3,550	2,491	3,048	1,727	6,120	16,459	4,320	569	2,722	2,669	1,839
24	2,239	2,701	3,911	3,424	932	5,850	15,273	4,098	3,260	2,497	1,663	1,957
25	2,014	2,528	1,648	3,303	3,067	8,600	13,774	3,244	2,623	2,150	307	1,905
26	2,272	4,277	3,695	2,263	2,533	8,540	12,386	2,649	2,592	2,139	3,087	1,920
27	1,647	3,664	3,244	2,119	2,183	10,480	12,155	4,326	2,816	1,508	2,419	1,919
28	553	3,078	2,747	4,078	2,465	9,960	11,001	4,002	2,911	257	2,183	1,200
29	3,144	1,479	1,957	3,147	.....	9,230	10,657	5,523	2,708	2,850	2,110	71
30	2,595	3,455	961	3,167	.....	8,100	10,114	6,180	2,636	2,507	1,968	1,832
31	2,401	.....	3,287	3,022	.....	6,770	.....	6,004	.....	2,628	1,413	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1895–96.												
1	1,739	3,422	10,480	17,500	2,810	12,820	22,500	8,040	5,720	2,289	1,454	2,277
2	2,166	6,114	10,460	21,600	2,160	65,400	24,300	7,050	4,870	2,122	610	2,000
3	2,763	8,600	11,080	14,660	4,420	82,150	24,150	5,820	5,020	1,979	2,796	1,859
4	3,265	8,700	14,490	11,250	3,250	45,200	21,250	6,750	4,580	305	2,579	1,681
5	1,819	7,360	12,870	7,000	3,040	26,400	15,540	5,400	3,840	358	2,382	1,319
6	429	6,520	9,750	5,960	2,720	20,100	15,060	6,900	2,865	2,944	2,223	620
7	2,907	5,940	7,000	6,960	13,580	19,900	14,200	6,600	1,855	2,540	2,451	2,398
8	2,568	5,460	7,030	7,600	26,900	15,620	13,620	6,030	3,930	2,443	1,617	5,004
9	1,999	4,550	9,070	6,000	27,000	17,600	12,860	5,050	3,420	2,295	1,641	5,919
10	1,978	4,310	7,610	6,480	22,200	13,910	13,020	4,700	3,160	2,462	3,209	4,900
11	1,718	6,520	7,820	5,960	17,300	13,460	13,700	5,420	5,250	1,741	3,043	3,841
12	1,184	8,950	6,960	5,460	13,670	11,820	13,600	4,420	6,250	763	2,369	2,754
13	1,144	7,600	7,590	7,140	12,220	10,610	17,100	4,740	4,390	2,928	2,509	2,640
14	8,363	5,880	7,530	5,800	10,460	10,400	21,000	4,560	3,360	2,366	2,535	4,323
15	10,244	6,840	5,210	5,600	9,400	9,000	27,400	4,250	4,650	2,208	1,551	3,076
16	11,959	10,800	6,820	5,380	7,655	10,030	26,400	3,310	3,900	2,217	438	3,444
17	9,192	12,630	5,550	4,920	8,420	8,100	28,100	2,895	3,750	2,098	2,954	3,334
18	6,995	13,910	4,580	4,100	7,690	9,720	30,100	4,560	3,690	1,426	2,388	2,975
19	5,918	13,250	4,710	3,335	7,140	9,640	27,900	2,970	3,690	203	2,178	2,076
20	4,764	12,110	5,006	5,500	7,360	14,460	25,100	2,880	2,610	2,166	1,990	2,486
21	5,665	11,270	5,150	4,480	7,180	24,100	23,000	3,410	1,820	2,057	1,990	4,685
22	4,714	11,530	6,550	3,820	6,260	27,000	20,900	3,530	3,700	2,077	1,232	4,656
23	3,751	11,340	13,360	4,090	4,900	25,100	18,200	2,680	3,410	2,451	183	4,577
24	4,299	8,440	17,100	3,840	6,030	21,350	14,970	1,920	2,450	2,757	2,846	3,661
25	3,780	9,490	12,910	4,190	6,460	17,750	13,500	3,850	2,410	2,053	2,375	3,292
26	2,718	10,150	12,010	3,550	6,780	15,040	10,230	2,850	2,430	1,378	2,165	2,090
27	2,416	12,860	10,870	4,870	6,140	17,400	10,600	2,600	1,850	3,278	2,129	2,014
28	4,457	19,100	12,770	4,400	5,655	20,100	9,920	3,200	1,080	2,581	2,107	4,117
29	3,539	18,400	15,160	4,410	5,360	18,500	9,680	3,480	2,950	2,375	1,502	2,936
30	3,102	14,680	12,770	3,530	.....	19,900	9,120	3,320	2,635	2,237	275	2,705
31	2,753	.....	11,270	3,540	.....	20,100	.....	4,380	.....	2,212	2,854	.....
1896–97.												
1	2,503	4,507	8,046	2,807	3,776	3,963	14,238	9,957	9,153	5,642	9,220	3,074
2	2,664	5,324	6,851	1,943	2,931	3,636	14,616	10,049	8,090	7,037	8,574	3,467
3	2,282	4,337	5,621	2,180	2,775	3,669	15,348	10,908	7,394	6,497	7,539	3,840
4	2,358	4,052	4,530	4,009	2,740	4,780	15,908	11,538	7,673	5,470	6,576	2,438
5	4,442	4,208	3,289	4,000	2,730	5,943	16,067	12,514	9,028	5,010	6,352	2,547
6	3,083	7,055	3,444	4,816	1,902	6,944	18,116	11,949	10,517	5,454	6,877	2,864
7	3,277	19,573	5,256	6,707	2,390	8,042	21,048	10,727	10,469	4,805	6,374	4,460
8	3,586	15,847	4,526	7,325	5,779	10,500	22,974	9,443	9,068	4,725	5,027	2,854
9	3,763	11,519	4,804	5,285	7,946	9,385	22,611	7,829	8,397	4,969	5,164	2,685
10	2,646	9,068	6,419	4,032	9,427	9,125	24,513	7,613	15,264	3,803	4,551	2,760
11	2,327	8,219	7,691	5,005	9,094	10,100	24,483	6,582	40,872	3,393	4,575	2,072
12	4,432	7,324	6,857	3,990	7,589	12,300	21,510	7,714	35,923	4,841	5,043	1,424
13	3,117	6,891	5,620	3,313	6,214	13,680	17,953	8,840	26,829	3,370	5,006	3,736
14	3,105	6,453	6,035	3,364	4,821	13,350	16,235	14,051	21,473	16,921	4,280	2,934
15	6,432	5,513	5,164	2,989	5,429	11,243	15,873	24,681	19,643	32,498	3,729	2,644
16	10,749	5,983	4,738	2,026	4,759	10,365	18,789	19,305	17,539	41,499	4,983	2,684
17	8,415	5,241	2,974	1,834	4,539	8,904	23,407	14,171	14,996	26,568	4,073	2,658
18	6,311	4,840	2,999	4,030	4,343	8,472	23,271	11,448	12,675	16,903	4,159	1,930
19	6,286	4,844	3,563	3,231	4,392	8,092	20,629	9,481	11,416	13,672	4,721	1,044
20	5,366	4,732	3,396	3,104	3,398	9,216	18,710	8,301	9,217	11,173	4,522	3,717
21	5,335	3,755	4,904	2,965	3,467	11,156	17,085	7,607	10,348	9,853	2,860	3,020
22	5,571	3,564	3,528	3,025	4,847	13,373	14,605	6,657	10,297	9,137	3,169	2,804
23	10,143	4,679	3,319	2,357	4,306	13,627	13,078	5,752	9,375	8,650	5,118	2,768
24	8,888	3,925	3,051	2,322	3,812	16,735	12,203	6,313	7,931	9,098	3,520	2,446
25	7,666	4,072	1,520	4,049	4,241	18,717	13,761	5,676	7,117	10,241	4,480	1,886
26	7,925	4,525	2,336	2,997	4,036	17,871	15,884	6,716	6,877	12,121	5,467	1,370
27	6,773	6,816	2,377	2,783	3,427	15,549	16,933	8,226	6,478	11,661	5,285	4,019
28	6,069	6,249	3,876	2,771	2,869	12,944	15,214	9,060	6,376	10,466	3,996	3,087
29	5,572	7,384	3,195	2,699	.....	11,758	12,341	10,277	5,569	9,070	3,610	2,874
30	5,069	9,358	2,793	1,994	.....	11,498	10,947	10,626	5,246	9,782	5,007	2,671
31	4,624	.....	2,498	1,721	.....	12,777	.....	9,616	.....	10,448	3,340	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1897–98.												
1	2,647	2,374	5,150	4,751	5,000	10,050	19,795	16,279	9,964	3,853	3,575	3,357
2	1,872	2,782	4,406	4,246	5,550	9,500	17,566	14,774	8,697	2,826	2,833	3,224
3	440	4,666	4,246	8,200	5,100	9,240	15,026	13,387	7,771	2,623	2,617	2,580
4	3,449	9,216	3,591	6,520	5,325	8,840	13,254	12,708	7,131	2,741	2,575	2,163
5	2,757	7,604	3,216	5,790	5,250	8,350	12,195	12,535	7,124	4,516	2,624	2,714
6	2,544	5,474	6,430	5,650	5,400	6,850	11,459	12,647	7,865	3,225	1,893	3,847
7	2,570	3,897	8,992	5,380	6,150	8,800	11,004	12,630	7,163	2,721	1,969	3,146
8	2,496	4,879	7,925	5,500	6,070	8,350	10,740	11,583	6,774	2,768	4,112	3,134
9	1,534	3,741	6,598	5,260	5,600	8,940	10,128	11,144	6,585	2,015	3,056	3,043
10	340	4,109	5,971	7,580	6,200	10,080	9,529	10,035	6,276	1,135	2,949	2,307
11	2,542	5,680	5,172	6,520	6,150	11,380	9,742	8,452	5,619	3,805	3,563	1,705
12	2,498	6,950	5,334	5,910	7,330	14,080	10,058	8,109	5,267	2,918	4,020	3,750
13	2,582	8,033	8,124	6,040	7,320	17,600	10,386	8,552	5,706	2,707	3,221	2,910
14	2,669	7,923	9,850	7,180	10,460	28,800	11,072	12,530	5,598	2,620	3,032	2,630
15	2,428	7,441	15,100	8,170	10,120	36,000	11,507	11,834	6,832	2,533	4,744	2,556
16	2,454	6,259	32,300	7,540	9,980	35,100	13,588	10,458	8,511	1,859	3,645	2,483
17	1,892	6,231	36,800	9,700	8,400	30,000	17,111	9,959	7,213	1,018	3,412	1,720
18	3,805	6,909	28,504	7,770	7,750	26,100	17,021	9,505	5,205	3,551	3,115	372
19	2,770	7,378	20,203	6,790	8,460	25,200	15,048	8,858	4,506	2,517	3,337	2,800
20	2,716	6,019	14,157	6,040	6,850	25,000	14,330	8,307	5,923	2,568	3,359	2,460
21	2,502	4,801	12,113	7,300	9,080	27,600	13,717	7,472	7,026	2,581	5,459	2,335
22	2,390	5,331	10,563	9,340	9,270	30,200	13,493	7,302	7,908	2,920	6,261	2,264
23	1,525	4,960	10,878	9,140	9,930	25,800	12,121	7,404	6,694	2,360	5,469	2,399
24	398	4,851	9,169	11,480	10,430	22,300	13,666	6,160	6,590	2,327	4,439	1,760
25	3,096	3,022	9,170	11,100	10,790	21,800	25,342	7,316	5,790	3,919	4,892	1,867
26	2,566	5,424	7,065	10,500	10,740	20,000	30,362	10,501	5,142	2,851	5,403	6,075
27	2,341	4,390	7,633	9,450	8,900	17,000	27,394	14,041	5,458	2,724	4,913	5,144
28	2,506	7,816	6,116	8,960	10,700	17,900	22,139	15,785	5,110	2,709	4,527	4,525
29	2,268	9,714	5,831	8,040	.....	18,000	19,424	15,081	4,567	2,713	5,306	4,198
30	1,648	6,924	5,653	6,620	.....	18,400	18,612	13,713	3,908	1,753	3,806	3,830
31	176	.....	5,410	6,750	.....	19,700	.....	11,811	.....	1,081	3,657	.....
1898–99.												
1	2,455	8,384	9,778	5,661	5,145	7,360	16,700	22,870	4,277	2,019	2,925	2,188
2	2,077	7,759	9,856	6,511	4,919	7,810	14,840	23,647	3,907	387	2,370	1,666
3	3,951	7,157	9,141	6,004	4,841	7,379	15,160	23,410	3,231	2,131	2,423	509
4	3,034	6,525	8,271	6,643	3,659	6,837	14,590	23,158	2,701	1,500	2,659	1,987
5	3,055	5,871	11,050	7,863	3,531	6,992	14,680	18,876	4,292	3,691	1,806	3,359
6	3,761	5,204	16,808	10,816	5,458	10,630	15,190	15,125	3,601	2,770	749	3,120
7	5,827	6,114	17,398	11,519	4,240	13,059	16,400	12,428	3,065	2,927	3,604	2,743
8	5,759	5,477	15,190	10,373	4,501	12,859	18,400	11,694	2,944	2,044	2,784	2,378
9	5,393	5,319	12,245	10,024	4,087	11,968	25,000	10,618	3,214	570	2,186	1,745
10	6,080	5,617	9,637	8,747	4,308	10,628	29,200	9,652	2,450	3,984	2,248	426
11	4,897	9,353	8,591	7,572	3,344	9,194	29,400	8,827	1,981	3,346	2,635	2,664
12	4,667	15,304	8,855	6,831	3,075	9,161	28,200	8,564	3,806	2,996	1,886	2,307
13	4,484	14,746	6,699	6,358	4,731	13,795	26,000	7,706	3,076	3,176	372	2,247
14	4,043	12,781	6,330	5,611	3,576	18,900	25,600	7,131	2,731	2,948	3,123	2,250
15	3,367	10,971	6,532	6,126	3,740	18,600	30,000	7,440	2,457	2,055	2,768	2,217
16	4,361	9,784	6,715	8,214	3,845	17,500	34,400	6,376	2,857	685	2,196	1,441
17	6,023	8,962	6,279	9,681	3,933	15,200	38,200	6,422	2,317	3,678	2,125	69
18	5,325	8,622	5,908	11,329	3,617	15,000	35,527	5,932	2,481	2,810	2,468	1,960
19	4,982	9,810	6,841	10,799	4,092	12,330	33,498	5,650	4,430	2,851	1,857	1,762
20	5,055	15,303	6,378	9,211	5,747	12,920	34,623	5,213	2,866	2,476	355	1,804
21	6,075	19,785	6,144	7,823	5,749	12,040	34,310	5,468	2,894	2,488	2,098	2,168
22	7,421	17,553	6,084	6,839	6,083	12,210	30,583	6,800	3,101	1,706	2,257	2,496
23	10,178	14,351	6,876	7,317	6,550	11,500	27,846	5,897	2,865	525	2,187	1,816
24	11,583	11,625	9,007	6,713	7,098	11,340	29,483	5,654	2,066	3,808	2,123	293
25	9,962	11,699	10,290	7,396	6,885	11,260	31,656	4,909	1,134	2,905	2,136	2,560
26	8,307	11,113	9,534	8,291	6,309	9,400	31,367	4,823	3,582	2,893	1,674	2,633
27	8,909	9,627	8,892	8,192	6,988	11,130	31,157	4,022	2,883	2,599	78	2,453
28	13,699	6,872	8,425	6,870	6,637	10,360	30,816	3,543	2,841	2,949	2,067	2,191
29	14,473	6,253	6,572	5,906	.....	11,240	26,805	5,255	2,506	2,241	2,153	2,452
30	10,534	8,677	6,024	6,808	.....	14,600	23,507	3,862	2,846	1,984	2,222	1,906
31	9,565	.....	5,792	5,504	.....	17,200	.....	4,383	.....	3,781	2,132	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1899–1900.												
1	497	2,829	2,677	3,230	4,631	17,350	11,129	10,674	5,332	479	2,134	1,389
2	3,156	3,542	1,941	2,696	4,408	33,802	12,507	11,597	4,356	2,653	2,192	417
3	2,519	3,632	904	2,471	2,871	37,732	13,412	11,485	4,397	2,370	2,338	284
4	2,337	3,692	3,219	1,860	2,468	33,090	15,389	12,887	6,520	311	1,505	2,340
5	2,193	2,889	2,834	1,902	5,520	26,893	16,797	15,881	7,492	2,226	113	2,206
6	2,282	4,645	2,846	1,209	5,687	20,329	17,602	13,223	7,616	2,369	2,038	2,099
7	1,739	3,617	2,768	82	5,910	17,011	19,458	11,654	6,491	1,695	1,694	1,912
8	288	3,205	2,847	2,649	5,933	14,368	21,184	10,332	5,721	350	1,771	1,252
9	2,244	3,034	1,868	2,561	7,112	13,356	21,511	9,817	4,178	2,471	1,860	90
10	2,156	3,024	665	2,220	9,550	13,067	18,308	9,661	3,873	2,372	1,939	1,901
11	2,204	2,473	3,192	2,182	9,060	12,211	15,157	10,324	5,275	2,315	1,347	1,637
12	2,107	863	2,715	2,327	9,930	11,403	13,660	8,880	3,899	2,339	100	1,540
13	2,007	3,729	2,236	1,463	12,720	11,067	14,497	7,629	3,701	2,270	2,562	1,626
14	959	3,069	3,369	266	47,000	10,875	14,557	7,972	3,702	1,629	2,461	1,428
15	61	2,879	5,051	2,654	52,989	8,984	13,646	7,001	3,811	186	2,218	732
16	2,020	2,770	3,772	2,574	41,745	10,684	14,643	8,313	2,705	2,022	2,354	37
17	1,962	2,846	2,478	2,269	28,923	13,364	15,945	10,062	2,800	2,206	2,483	1,673
18	2,061	1,999	3,969	2,335	19,311	14,243	17,886	8,772	4,368	2,228	1,986	2,155
19	2,354	548	2,814	2,394	13,731	14,536	22,372	7,885	3,526	2,299	1,372	2,242
20	2,460	3,462	2,892	1,893	12,947	16,437	29,896	11,519	2,940	2,283	3,541	2,202
21	1,373	3,076	3,387	2,041	11,549	20,324	34,926	18,169	2,931	1,483	2,469	1,977
22	50	2,914	3,868	6,810	12,317	19,517	30,809	15,538	3,062	146	2,229	1,245
23	2,126	2,805	2,851	7,950	19,300	16,729	27,402	12,433	2,233	2,125	2,072	36
24	1,667	2,603	2,383	8,184	20,400	14,555	24,627	10,344	1,487	2,365	2,072	2,175
25	1,820	2,312	2,798	7,234	24,772	12,680	23,144	9,195	3,915	2,133	1,433	2,385
26	1,978	1,291	4,334	6,027	27,591	12,449	20,338	7,867	2,987	2,159	296	2,229
27	2,333	3,380	3,667	4,401	23,911	11,429	16,730	6,824	2,732	2,189	1,754	2,209
28	1,399	2,909	2,954	3,891	19,187	11,065	14,422	7,271	2,377	1,641	2,030	2,159
29	123	2,789	2,916	6,291	.....	11,264	11,727	6,455	2,448	242	1,958	1,498
30	2,513	947	1,898	5,323	.....	11,290	11,326	5,109	1,825	2,487	1,889	309
31	2,460	.....	593	4,776	.....	11,484	.....	6,272	.....	2,317	1,956	.....
1900–1901.												
1	2,763	2,456	8,975	4,628	2,888	2,360	14,080	16,296	19,479	4,048	4,869	2,010
2	2,490	2,468	7,374	4,574	2,191	1,792	12,510	15,547	16,315	2,881	4,577	2,481
3	2,289	1,608	7,641	4,284	1,630	745	12,580	15,222	15,139	2,694	3,212	4,093
4	2,137	277	6,844	3,850	3,919	3,189	18,100	14,601	13,616	603	2,424	3,507
5	2,109	2,643	11,383	2,343	3,007	2,851	31,650	12,554	12,666	2,633	4,404	2,926
6	1,482	2,478	17,046	2,192	2,957	2,991	34,200	11,766	11,270	2,586	3,016	2,916
7	246	2,263	15,505	4,462	2,526	2,906	33,959	10,749	9,972	2,403	2,951	1,831
8	2,315	2,082	12,137	3,210	2,531	2,897	61,200	9,831	9,470	3,905	4,722	1,467
9	2,515	2,526	9,237	2,872	1,916	2,116	62,511	8,815	9,653	3,260	11,252	4,086
10	2,580	12,221	7,839	3,284	640	1,851	48,756	9,053	10,520	3,083	8,627	2,879
11	2,752	12,035	6,101	3,796	3,356	4,591	38,023	10,048	9,175	3,522	6,705	2,951
12	3,300	9,477	6,020	2,595	2,726	12,620	31,463	13,099	7,948	3,913	6,982	2,355
13	4,406	6,906	5,764	2,259	2,510	14,060	26,155	15,886	7,024	2,416	5,592	2,519
14	2,914	5,804	5,537	4,480	2,667	11,920	22,319	14,640	6,571	2,405	4,790	1,599
15	4,103	5,063	4,338	3,402	2,516	9,600	20,832	13,081	5,519	4,315	4,358	1,749
16	3,316	4,473	4,023	3,359	1,846	7,870	19,528	11,072	4,746	3,080	3,941	3,764
17	2,904	3,158	5,321	3,626	889	5,660	17,686	9,684	5,777	2,907	2,928	3,133
18	3,201	2,466	4,268	3,757	3,312	7,690	16,317	8,362	4,808	2,832	3,965	3,182
19	3,117	4,473	3,692	2,712	2,850	6,110	15,627	9,095	4,220	2,959	4,864	1,450
20	2,283	3,626	3,798	2,348	2,785	5,980	15,010	19,104	3,916	2,292	3,619	4,232
21	890	3,348	4,245	4,641	2,712	5,770	13,764	28,185	4,186	2,455	3,396	2,602
22	3,248	6,071	3,177	3,408	2,803	12,390	16,027	27,308	3,286	4,055	3,078	1,790
23	2,702	7,477	3,125	3,462	1,929	15,210	21,961	21,863	3,520	3,185	3,017	4,004
24	2,643	6,235	4,826	3,388	560	13,420	26,279	18,063	4,987	2,754	1,968	2,963
25	2,438	4,868	5,034	3,363	3,272	14,110	28,294	16,986	4,382	2,802	3,185	2,615
26	2,447	7,257	7,615	2,415	2,857	13,650	31,770	17,300	4,119	2,753	5,422	2,525
27	1,568	12,845	7,827	2,265	2,476	20,800	29,915	17,588	4,238	1,779	5,132	2,641
28	961	15,338	6,859	4,303	2,394	26,350	23,868	18,588	4,013	629	4,721	1,759
29	2,887	12,689	5,119	3,392	.....	26,300	19,629	23,391	2,850	3,755	4,223	300
30	2,484	10,844	4,139	3,075	.....	21,600	16,732	23,766	2,239	3,193	3,659	3,367
31	2,523	.....	5,473	3,070	.....	15,400	.....	22,417	.....	3,522	2,308	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901–2.												
1	2,929	3,150	2,435	26,500	7,638	22,629	28,212	19,442	7,914	4,069	3,755	2,147
2	2,508	2,186	4,630	22,250	7,471	51,985	24,483	25,470	7,499	4,422	2,057	4,144
3	2,703	2,070	3,294	16,650	9,057	59,880	20,272	20,161	6,408	3,974	2,052	2,961
4	3,012	4,259	3,287	13,090	8,605	61,185	17,209	15,792	5,978	4,465	4,125	2,838
5	1,635	3,168	2,882	11,189	8,313	44,377	14,803	14,881	5,764	7,016	3,170	2,603
6	1,087	3,119	2,754	9,652	7,315	28,452	12,842	14,091	5,476	6,569	2,842	1,468
7	3,626	2,931	2,065	7,856	6,398	21,990	12,015	13,870	4,376	5,650	2,889	512
8	2,818	3,048	1,333	8,130	5,124	19,471	11,374	12,816	3,828	4,937	2,957	2,997
9	2,682	1,936	4,103	7,623	4,947	17,656	15,265	12,424	5,249	4,532	2,235	2,785
10	2,686	1,460	3,628	6,985	5,981	18,624	32,204	10,881	4,697	3,841	2,226	2,780
11	2,557	3,952	4,187	6,130	5,287	18,834	39,195	9,104	5,179	3,973	4,540	2,988
12	1,731	2,378	5,111	5,737	5,098	18,973	35,563	9,162	4,663	2,618	5,371	4,967
13	607	2,618	6,865	6,856	4,862	23,909	27,127	7,858	3,856	2,881	8,544	3,655
14	3,595	2,827	6,447	5,387	4,635	33,547	22,988	7,690	3,732	4,503	7,500	3,260
15	6,149	3,697	9,440	5,247	3,502	34,170	19,045	6,799	3,373	3,146	6,082	5,178
16	13,374	2,615	34,100	5,646	3,591	28,373	16,452	6,486	5,009	3,026	4,351	4,914
17	11,552	2,361	41,500	5,701	4,987	26,745	14,485	5,591	4,297	3,493	3,362	4,760
18	8,484	4,972	24,200	5,069	4,180	34,954	13,602	4,814	6,974	3,654	4,806	4,206
19	6,509	3,127	15,690	4,924	4,009	34,583	12,194	6,008	7,067	2,490	3,266	3,236
20	5,038	3,138	12,580	5,821	4,194	26,011	11,090	5,260	5,850	2,595	3,123	2,624
21	5,785	3,274	10,390	5,217	4,120	22,375	11,580	5,444	4,434	4,732	3,066	2,804
22	4,575	3,478	7,100	6,735	2,995	22,754	10,922	5,405	4,118	4,475	3,247	5,081
23	4,421	2,164	7,370	15,405	3,075	23,191	10,713	5,139	5,644	5,511	2,638	3,849
24	3,908	1,661	6,370	21,308	4,835	23,697	10,737	4,224	5,487	5,976	4,052	4,021
25	4,239	4,785	6,750	18,738	3,801	21,764	10,966	4,238	5,077	6,120	5,653	3,867
26	2,805	3,996	9,220	14,659	4,113	19,186	10,138	6,239	4,363	4,977	4,534	3,511
27	2,659	3,893	7,760	13,144	6,870	17,877	11,369	7,018	4,674	4,021	3,944	2,179
28	4,527	1,461	7,722	12,472	12,369	16,966	16,672	10,379	6,680	5,015	3,631	2,106
29	3,525	4,511	7,568	11,416	.....	15,766	15,144	13,962	5,347	3,955	2,906	4,961
30	3,200	2,765	15,858	9,689	.....	22,711	13,106	14,080	5,762	3,887	2,183	6,161
31	3,054	.....	25,800	8,851	.....	31,751	.....	10,466	.....	3,627	1,551	.....
1902–3.												
1	9,696	12,377	5,362	8,473	9,033	26,761	25,268	6,748	2,005	7,708	3,652	2,890
2	9,021	9,338	4,873	8,298	10,077	30,045	25,675	6,971	1,637	7,304	3,011	2,982
3	7,985	9,053	4,569	7,877	9,401	27,928	22,025	6,212	1,541	6,891	4,639	3,481
4	6,477	7,943	5,455	8,850	9,689	22,588	20,112	6,132	2,540	5,248	3,243	2,921
5	5,296	7,179	6,115	11,264	11,622	19,177	20,008	5,905	2,701	4,718	3,332	1,785
6	6,640	6,538	4,782	11,137	12,443	17,744	21,321	6,042	1,773	5,591	3,542	1,804
7	7,766	6,421	3,481	10,448	11,056	15,694	18,395	6,071	562	4,742	4,267	2,254
8	8,643	5,486	5,395	9,586	9,123	15,260	17,323	5,901	3,622	3,836	3,842	4,111
9	7,849	5,200	4,239	8,630	8,309	22,311	19,760	5,575	2,804	4,419	3,286	3,012
10	6,242	6,443	4,422	7,096	7,876	32,304	21,866	5,008	2,729	4,392	4,834	2,838
11	4,884	5,195	4,155	6,449	8,040	37,542	20,907	4,505	2,741	2,822	3,318	2,574
12	4,327	5,161	4,168	7,355	9,279	43,867	17,917	4,973	2,940	2,447	3,276	1,602
13	6,258	5,203	3,409	6,420	12,856	45,469	16,515	5,001	3,579	4,371	3,295	304
14	6,370	5,295	3,542	6,776	13,930	39,851	15,341	4,877	11,930	3,439	3,852	3,110
15	5,899	5,385	5,354	7,136	12,752	32,205	14,362	4,677	16,400	3,200	3,166	2,792
16	5,477	5,114	4,234	7,179	11,861	29,438	15,634	4,324	15,400	3,519	2,242	2,579
17	5,061	6,106	4,811	6,379	9,919	25,507	17,833	3,770	17,200	3,126	4,127	2,668
18	4,006	5,251	8,820	5,645	8,461	22,441	17,242	4,404	14,200	2,131	2,939	2,509
19	3,502	5,185	12,509	6,549	8,209	21,163	14,702	3,902	11,520	2,266	2,824	1,688
20	5,263	4,976	11,628	5,954	8,095	20,566	13,556	3,910	9,410	4,470	2,667	331
21	5,286	4,787	9,860	5,930	7,365	23,260	12,600	3,804	7,890	3,877	2,668	3,419
22	6,358	4,342	11,812	7,257	7,038	28,051	11,533	3,656	24,400	5,641	2,350	2,763
23	5,831	3,857	17,858	8,590	7,890	31,840	10,258	3,168	35,600	7,856	2,847	2,581
24	5,178	5,234	19,966	8,187	7,245	37,098	10,220	2,407	28,384	7,270	4,220	2,325
25	4,203	4,491	16,553	7,965	7,192	39,050	9,453	3,373	21,521	6,530	3,108	2,333
26	3,510	4,431	14,345	8,026	7,024	37,107	8,331	3,312	18,112	5,082	3,054	1,563
27	5,320	2,935	11,940	7,064	6,896	29,868	8,469	2,487	14,994	5,526	3,417	373
28	5,087	5,614	10,307	6,662	7,964	23,361	7,221	2,705	11,757	4,194	3,477	2,833
29	15,154	4,065	9,968	6,672	.....	20,328	6,951	2,788	10,296	3,951	2,373	2,361
30	22,253	3,831	8,707	7,125	.....	19,778	6,815	2,054	8,659	3,846	2,327	2,358
31	17,176	.....	9,063	7,705	.....	20,322	.....	653	.....	3,668	4,293	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1903–4.												
1	2,444	1,890	2,906	2,825	4,039	4,034	17,994	46,336	6,252	3,236	3,230	2,271
2	2,574	4,264	2,741	2,265	3,115	3,828	21,175	38,498	5,241	3,516	2,681	2,254
3	1,675	3,065	2,717	1,901	3,041	3,949	23,976	29,795	6,233	5,193	2,321	1,643
4	339	3,176	2,762	4,265	2,854	4,274	22,677	22,885	5,574	4,586	2,651	393
5	2,649	3,012	1,686	2,796	2,812	3,667	19,056	20,321	5,431	5,174	2,647	409
6	2,529	3,042	426	2,753	2,109	4,373	17,218	18,408	6,292	4,575	1,799	3,378
7	2,415	1,956	3,170	2,644	1,242	6,085	17,726	16,477	6,583	3,795	327	2,844
8	2,567	1,789	2,327	2,724	3,801	6,730	19,432	13,731	8,287	3,340	3,163	2,370
9	2,705	4,139	2,717	1,904	3,152	10,627	20,738	13,193	8,368	2,496	2,850	2,301
10	1,686	3,142	2,773	1,298	2,866	13,740	28,174	13,244	7,520	2,302	2,620	1,546
11	2,795	3,019	3,163	3,852	2,869	14,711	36,984	14,560	6,298	4,225	2,382	358
12	5,950	3,028	2,210	2,901	2,813	13,406	33,942	17,567	5,269	2,881	2,529	2,303
13	5,910	2,989	2,077	2,878	1,852	11,664	27,748	17,469	5,921	2,783	1,578	2,275
14	6,218	1,892	4,465	2,798	1,017	10,881	22,937	13,795	5,115	2,716	288	2,295
15	5,784	1,163	4,440	3,059	3,728	9,728	19,028	11,340	4,465	2,713	3,065	2,586
16	5,223	3,767	3,723	2,095	2,965	8,831	16,369	11,657	4,175	1,667	2,850	3,396
17	3,394	3,064	4,098	1,613	2,873	7,883	14,613	15,507	3,921	928	2,445	7,983
18	3,909	3,232	3,438	3,936	2,660	7,353	14,544	19,890	2,748	3,758	2,519	5,595
19	5,806	4,187	2,323	3,042	2,737	6,668	14,624	16,912	2,862	2,714	2,495	5,526
20	6,145	4,641	1,668	2,769	1,909	6,817	15,183	21,331	4,193	2,662	1,550	4,423
21	5,608	3,504	5,306	2,920	899	8,714	14,449	27,354	3,592	2,638	393	3,397
22	5,161	2,803	9,348	2,820	3,679	9,198	14,355	22,002	2,914	2,403	5,267	3,156
23	4,463	4,430	8,833	1,753	3,364	9,500	13,300	17,542	2,911	1,384	5,819	3,121
24	3,043	3,375	7,195	1,062	3,394	11,360	12,254	14,211	2,946	367	4,494	2,003
25	3,061	3,093	5,121	3,621	3,592	14,370	12,684	11,326	1,918	2,601	3,468	1,601
26	4,871	1,114	4,730	2,869	4,129	23,479	13,620	10,999	1,805	2,680	3,489	3,942
27	4,076	3,787	4,111	2,832	3,392	35,149	15,139	10,508	4,002	2,397	1,927	3,142
28	3,150	2,378	5,144	2,875	3,397	36,205	20,584	9,431	3,024	2,485	767	3,887
29	3,278	1,257	3,489	2,914	5,043	31,579	35,300	8,496	3,017	2,579	3,487	3,504
30	3,317	3,751	3,059	2,241	.....	23,650	45,300	7,704	3,132	1,661	2,402	3,486
31	2,238	.....	3,155	1,681	.....	19,408	.....	7,721	.....	260	2,298	.....
1904–5.												
1	4,759	3,084	2,606	453	2,838	2,526	44,887	7,434	3,414	3,585	2,477	2,713
2	5,205	3,086	2,500	3,147	2,784	2,695	37,260	6,537	3,015	2,941	4,775	2,109
3	5,457	3,063	1,659	3,084	2,760	2,527	28,553	6,379	1,958	2,938	4,676	3,109
4	4,359	3,181	390	2,981	1,980	1,514	22,206	6,002	1,470	4,897	3,939	6,430
5	3,977	2,112	2,640	2,812	457	430	18,850	5,868	3,708	6,028	2,591	20,900
6	3,623	1,656	2,434	2,735	3,505	2,768	19,442	6,094	3,116	4,503	1,632	17,434
7	3,213	3,813	2,469	2,662	2,865	2,567	25,546	5,732	2,987	3,881	3,631	12,972
8	2,128	3,006	2,498	4,358	2,518	2,596	25,097	6,548	3,070	2,321	2,955	9,854
9	1,377	2,795	2,031	7,710	2,440	2,774	20,156	6,806	3,710	1,907	2,443	7,257
10	3,923	2,567	1,392	6,930	2,695	2,811	16,880	6,174	2,993	3,947	2,390	5,541
11	3,131	2,667	289	6,844	1,902	2,418	15,309	5,619	2,482	3,148	2,441	5,953
12	2,973	1,702	2,255	6,470	489	2,305	17,546	5,303	4,330	2,836	1,454	4,960
13	2,798	431	2,028	6,301	3,094	4,898	19,451	4,159	3,427	2,807	474	5,035
14	3,067	3,656	2,018	4,862	2,613	3,879	18,502	3,905	3,033	2,826	5,031	7,285
15	2,124	3,293	2,033	4,377	2,573	3,842	16,148	5,467	3,930	1,764	2,953	7,330
16	1,946	3,107	1,977	6,111	2,510	4,020	14,215	3,758	4,296	581	2,697	5,525
17	4,023	3,070	1,153	4,352	2,678	4,034	12,661	6,010	2,599	3,637	2,980	4,309
18	3,031	2,858	177	3,893	1,825	2,977	11,273	6,938	2,348	2,759	3,257	5,171
19	2,925	2,131	1,775	3,920	456	4,050	9,761	6,716	4,410	2,723	2,887	8,525
20	2,780	1,049	1,886	4,086	2,940	11,100	8,546	6,211	3,617	2,404	2,141	17,529
21	2,933	3,629	1,978	2,494	2,691	11,210	7,961	5,208	4,253	2,538	3,690	13,968
22	2,076	3,091	1,962	2,387	2,521	10,500	8,018	5,653	5,768	1,677	2,739	11,540
23	6,130	3,055	1,861	4,741	2,464	9,150	10,857	4,564	8,238	383	2,729	9,007
24	6,808	1,096	1,164	3,515	2,574	8,800	10,793	4,520	7,433	2,603	2,505	6,588
25	5,330	4,010	154	3,043	1,666	8,740	9,115	4,178	5,593	2,559	2,766	6,467
26	4,607	2,632	302	2,955	410	11,570	8,094	3,947	5,918	2,382	1,481	5,262
27	4,002	1,649	2,462	2,931	2,850	32,003	7,698	2,866	4,987	2,376	316	4,721
28	3,894	3,697	2,705	1,827	2,514	36,429	7,225	2,812	5,912	2,343	2,344	4,488
29	3,075	3,173	3,017	895	.....	41,219	6,856	4,343	7,300	1,403	2,458	4,133
30	2,674	2,540	3,022	3,996	.....	45,940	6,639	2,769	5,615	128	2,374	2,830
31	4,364	.....	1,541	3,087	.....	45,617	.....	3,171	.....	2,079	2,445	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1905–6.												
1	2,733	3,240	5,043	7,791	6,484	7,473	15,770	7,945	20,079	6,426	5,374	2,202
2	4,371	2,796	3,984	6,896	6,201	6,268	15,330	8,162	15,347	9,087	7,314	1,251
3	3,276	2,818	3,714	6,152	4,087	5,698	13,070	8,359	12,957	8,739	5,357	1,635
4	3,190	1,813	8,930	5,827	3,692	8,095	11,970	8,641	12,471	7,183	4,339	3,764
5	3,214	1,439	15,540	6,091	5,227	12,552	11,950	9,198	10,974	8,890	4,044	2,816
6	3,336	4,850	12,350	6,175	3,693	14,218	13,940	7,998	9,410	8,980	5,335	2,716
7	2,390	4,409	9,354	5,923	4,062	11,207	17,000	9,276	9,015	7,386	4,468	2,451
8	2,103	5,345	7,933	6,595	3,753	9,714	14,290	8,735	11,016	5,663	3,945	1,535
9	4,179	5,559	6,009	5,551	3,734	8,499	13,940	8,277	11,419	5,945	3,969	101
10	3,238	5,251	5,483	5,042	2,301	7,765	13,840	7,965	10,575	5,125	3,643	2,205
11	3,065	3,907	6,016	4,560	2,158	7,313	14,800	9,914	10,623	4,729	2,251	2,256
12	2,544	3,513	4,087	4,383	4,978	8,534	17,900	9,501	9,212	4,614	1,986	2,246
13	2,812	5,062	4,099	3,013	3,803	7,052	19,400	7,803	8,018	4,596	4,435	2,282
14	3,116	3,679	4,338	3,800	3,681	6,352	19,200	8,312	6,897	3,361	3,327	2,127
15	3,589	3,552	4,429	5,578	3,761	5,020	17,600	8,974	6,352	2,825	2,877	1,433
16	4,620	3,732	2,838	5,025	3,503	4,542	25,800	7,852	4,720	4,548	2,946	76
17	3,684	3,654	2,286	6,174	2,345	3,436	35,400	6,797	5,283	3,229	2,850	2,145
18	3,311	2,289	4,622	7,145	2,497	4,322	29,298	6,863	12,608	3,102	1,995	2,184
19	3,381	2,461	3,460	6,781	4,921	5,416	22,112	7,087	15,349	3,649	839	2,134
20	3,396	4,397	3,371	5,587	3,663	4,424	19,839	6,783	13,500	4,137	3,641	2,174
21	2,297	3,537	3,997	4,958	3,680	4,301	17,289	7,014	10,995	3,522	2,945	2,107
22	2,886	3,256	4,664	6,467	5,161	4,482	15,786	5,637	9,087	3,318	2,734	1,367
23	4,760	3,129	5,211	7,437	8,029	4,851	16,601	4,715	7,374	4,701	2,571	103
24	3,764	2,892	5,837	13,845	9,200	3,030	14,856	4,818	7,361	3,796	2,709	2,143
25	3,526	1,827	5,638	23,900	7,210	3,219	12,634	4,588	10,934	4,456	1,581	2,189
26	3,447	1,193	6,460	19,804	9,980	5,317	10,785	4,451	11,674	4,285	753	2,309
27	3,376	4,118	5,505	13,643	11,131	4,410	9,749	6,184	9,747	3,932	3,456	2,518
28	2,090	3,307	4,900	10,626	10,085	7,508	8,474	12,300	8,050	2,620	2,804	2,386
29	1,851	3,212	4,890	9,629	.....	17,100	7,621	35,650	9,779	2,599	2,596	1,515
30	4,119	1,413	4,881	6,770	.....	18,600	8,537	36,910	5,595	4,602	2,619	167
31	3,418	.....	6,432	6,403	.....	17,500	.....	27,639	.....	3,604	3,040	.....
1906–7.												
1	2,288	3,344	2,397	4,474	3,476	3,025	27,271	14,731	4,299	4,552	2,806	606
2	2,379	3,157	1,776	6,962	2,214	2,269	22,680	17,411	4,913	4,526	2,921	1,713
3	2,237	2,126	4,441	7,174	2,598	504	17,667	15,068	6,283	5,129	1,815	2,859
4	2,206	452	3,395	8,817	4,901	3,591	14,800	11,149	7,516	3,509	341	2,645
5	2,266	3,438	2,644	14,850	3,806	3,214	13,304	10,130	9,369	4,456	3,264	2,711
6	1,514	3,352	2,622	15,038	3,303	3,011	13,019	10,904	9,433	2,999	3,092	2,655
7	132	3,246	2,505	14,821	3,194	3,010	13,038	9,952	10,599	2,634	2,989	1,596
8	1,977	2,686	1,654	13,409	3,467	3,034	12,588	9,392	10,557	4,640	2,770	115
9	1,936	2,460	366	10,793	2,326	2,282	11,388	9,113	8,763	3,812	2,850	2,775
10	2,155	1,652	2,900	7,720	1,273	647	10,062	8,929	8,402	3,738	1,881	3,083
11	2,652	334	3,054	6,865	4,640	4,056	9,855	8,283	7,252	3,493	332	2,838
12	2,723	2,851	2,816	5,453	3,477	3,304	10,112	8,199	6,689	3,338	2,950	2,830
13	1,574	2,842	2,901	5,004	3,218	3,046	10,996	8,462	6,241	2,225	2,764	2,708
14	662	3,270	2,777	6,409	3,172	2,920	11,558	7,529	5,651	3,032	2,690	1,762
15	3,508	3,285	1,903	4,866	3,330	3,247	12,506	6,726	4,069	5,028	2,502	2,914
16	3,127	3,638	487	4,639	2,299	2,704	12,646	7,950	4,139	4,158	2,281	3,698
17	3,011	2,406	3,564	4,533	1,136	4,927	12,357	8,665	5,642	3,459	1,473	2,856
18	2,540	941	3,066	4,094	4,550	9,430	11,748	13,348	4,147	3,311	132	2,502
19	2,471	4,121	3,120	2,446	3,504	10,940	10,939	12,214	3,622	3,181	1,830	2,556
20	1,497	3,405	2,910	2,695	3,105	10,940	10,061	10,763	3,553	2,518	1,857	2,673
21	133	4,995	3,002	5,911	3,132	9,640	9,098	9,384	3,476	456	2,014	1,789
22	2,525	5,048	2,031	5,373	3,304	10,671	9,333	8,185	2,250	3,949	2,141	176
23	2,850	5,269	478	5,013	2,308	11,243	7,815	7,360	1,965	3,129	2,348	2,426
24	3,337	4,072	4,223	4,774	583	14,784	8,640	6,561	4,652	3,121	1,235	2,969
25	3,186	3,518	850	4,345	4,346	15,302	13,802	5,180	3,517	3,024	363	4,856
26	3,201	5,094	3,999	2,747	3,324	14,043	17,572	4,929	3,246	2,735	1,664	5,508
27	2,671	4,011	3,271	2,496	2,799	13,337	14,134	6,311	3,191	2,067	1,356	4,921
28	3,449	3,629	3,289	5,566	2,734	13,364	15,465	7,011	3,241	1,021	1,262	3,043
29	4,738	1,559	2,239	3,838	.....	15,504	15,533	6,565	2,044	4,030	1,290	3,172
30	3,648	4,823	551	3,634	.....	19,465	14,232	6,173	1,815	3,214	1,321	12,005
31	3,398	.....	4,054	3,647	.....	24,309	.....	6,253	.....	3,086	1,214	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1907–8.												
1	14,439	15,769	6,717	14,082	4,787	6,039	19,608	14,835	11,442	2,821	1,172	2,670
2	10,646	11,427	7,150	12,632	4,708	6,712	16,676	16,159	12,045	2,772	177	2,592
3	7,553	11,027	6,225	10,945	6,421	6,635	14,666	16,624	9,640	2,253	2,800	2,544
4	5,993	21,231	5,936	8,580	5,002	6,252	12,562	15,990	7,763	370	2,778	2,253
5	5,087	21,119	5,778	7,370	4,348	5,977	10,021	14,592	6,378	576	2,713	1,401
6	5,284	15,329	5,191	7,449	4,198	5,699	9,832	14,430	5,211	3,380	3,032	417
7	5,838	19,805	3,546	6,975	3,508	5,479	9,823	12,248	4,716	2,760	5,079	397
8	5,742	32,330	4,601	9,520	3,033	5,658	11,038	13,013	5,734	2,684	6,571	2,925
9	6,854	29,646	6,025	12,691	3,639	7,361	12,693	18,391	5,323	2,693	4,898	2,947
10	10,139	21,388	5,802	11,720	5,148	6,312	12,615	18,817	3,230	2,418	5,008	2,749
11	8,180	18,155	9,993	9,946	4,031	6,264	12,312	17,833	4,010	1,574	4,089	2,184
12	5,892	15,643	23,387	9,399	3,902	5,957	12,445	15,230	3,720	285	3,697	1,413
13	4,703	13,699	19,880	13,389	3,788	7,065	13,046	13,352	2,637	1,976	3,461	138
14	6,196	12,057	13,899	15,579	3,520	9,091	11,438	12,643	2,686	2,063	3,526	2,240
15	5,170	10,666	10,314	12,924	5,846	10,558	10,140	13,084	4,389	2,255	2,985	2,277
16	4,621	9,295	10,074	11,267	17,905	15,654	9,768	13,008	3,379	2,513	2,333	2,254
17	4,247	8,256	10,295	8,869	22,895	19,604	10,561	11,345	3,047	2,048	3,690	2,181
18	3,921	8,688	9,865	8,251	21,019	17,322	10,094	10,527	2,796	1,191	3,385	1,982
19	2,815	7,682	9,021	7,525	15,069	14,299	9,436	9,673	3,277	80	2,862	1,380
20	1,936	7,787	8,124	7,525	10,539	11,600	10,418	8,858	1,743	2,116	2,678	70
21	4,135	7,503	7,055	6,347	9,137	9,862	11,287	8,235	818	2,718	2,555	1,658
22	3,908	7,413	6,791	6,650	7,977	8,822	10,031	7,564	2,711	4,018	1,866	1,541
23	3,711	7,310	8,074	6,404	7,122	9,071	8,794	7,838	2,708	4,177	1,891	1,545
24	3,626	6,837	9,257	5,364	7,437	10,783	8,482	8,453	2,784	3,102	3,826	1,529
25	3,650	8,200	13,956	4,668	6,275	17,382	9,366	9,074	2,693	1,889	2,812	1,523
26	2,374	8,836	15,597	5,253	5,879	18,211	10,650	7,789	2,493	1,815	2,762	852
27	1,099	9,741	13,315	6,658	6,647	16,612	12,513	6,897	1,653	3,946	2,771	73
28	3,693	8,530	11,473	6,537	6,844	18,540	14,798	6,063	499	3,332	2,731	1,511
29	5,535	8,903	11,193	7,235	6,511	19,578	15,888	5,414	3,401	2,876	1,560	1,674
30	20,272	7,709	12,288	6,568	.....	22,530	18,024	4,832	2,866	2,946	388	1,870
31	20,783	.....	13,355	5,221	.....	22,470	.....	6,010	.....	2,538	2,465	.....
1908–9.												
1	1,901	131	2,749	2,171	3,897	11,354	10,029	11,568	5,869	2,666	97	1,270
2	2,001	2,032	2,512	1,470	2,868	9,658	9,851	11,570	4,852	2,746	2,239	1,401
3	1,146	2,175	2,194	309	2,820	8,761	9,381	12,935	4,649	1,664	2,164	1,960
4	144	2,225	2,191	2,057	2,773	8,230	8,620	12,216	4,438	328	2,108	1,257
5	1,662	2,195	1,318	1,771	2,626	7,292	9,164	11,125	2,627	522	2,213	135
6	1,699	1,949	167	2,345	1,878	5,514	10,239	11,212	3,108	3,596	2,404	581
7	1,782	1,112	2,326	4,045	1,739	5,266	12,774	10,583	6,386	2,928	1,271	2,379
8	1,928	204	2,507	8,704	4,763	7,023	16,622	10,432	6,753	2,771	121	1,960
9	1,907	1,963	2,466	6,312	4,328	5,608	19,402	10,196	5,822	2,924	2,198	2,317
10	1,115	2,021	2,318	4,381	4,924	5,141	15,813	10,897	5,220	2,065	2,200	2,356
11	146	2,060	2,313	5,301	6,016	7,821	10,740	11,010	4,720	216	2,092	1,399
12	1,891	1,973	1,509	4,327	6,287	5,573	8,831	11,530	3,936	2,371	1,988	150
13	1,959	1,961	305	3,710	5,768	5,335	7,370	10,482	3,518	2,366	2,025	1,839
14	1,894	1,096	2,434	3,584	5,125	5,517	7,945	8,591	5,117	2,392	1,179	1,893
15	1,853	222	2,764	3,435	6,153	6,696	18,503	7,227	3,779	2,266	126	1,998
16	1,763	1,968	2 687	2,331	5,369	4,650	34,505	6,803	3,674	2,283	1,903	2,210
17	1,034	1,962	2,263	609	4,627	5,932	34,929	7,666	3,665	1,408	1,827	2,213
18	88	1,983	2,333	3,106	4,154	5,682	26,077	9,304	3,626	99	2,120	1,337
19	1,744	1,993	1,537	2,633	4,363	5,199	21,554	9,721	3,716	2,292	2,327	139
20	1,852	2,008	381	2,527	4,335	3,788	19,239	9,210	6,239	2,347	2,132	1,889
21	1,882	1,225	2,342	2,575	7,666	4,500	21,389	8,661	6,053	2,390	1,121	1,718
22	1,894	184	2,218	2,595	13,970	6,140	18,690	7,672	4,489	2,409	130	1,749
23	1 829	2,075	2,263	2,038	14,370	5,163	17,116	6,506	4,300	2,341	2,006	1,729
24	1,069	2,146	2,114	894	14,500	5,270	16,553	7,040	3,914	1,470	2,134	1,753
25	90	2,139	139	3,952	18,150	6,293	13,920	6,276	3,592	116	2,241	1,271
26	1,701	377	676	3,340	18,080	14,949	12,884	5,536	2,287	2,388	2,282	167
27	1,588	2,064	174	3,182	15,295	17,542	11,551	5,431	1,464	2,450	2,543	1,894
28	1,541	1,216	2,412	3,186	12,460	14,198	11,240	5,114	4,074	2,421	1,456	2,056
29	1,553	306	2,294	3,275	.....	12,987	12,112	4,497	3,062	2,322	283	2,438
30	1,842	2,724	2,274	2,223	.....	11,469	12,400	5,352	2,448	2,160	1,737	4,101
31	1,199	.....	2,284	1,374	.....	10,719	.....	6,132	.....	1,252	1,486	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1909–10.												
1	4,857	2,010	2,832	1,233	6,244	16,620	18,030	11,887	3,808	2,466	2,573	1,704
2	2,746	2,002	2,610	115	5,784	25,300	16,096	11,641	4,307	1,557	2,296	1,859
3	1,656	2,091	2,777	1,929	5,329	28,420	14,154	10,422	5,597	1,364	2,101	1,059
4	3,676	2,190	2,028	1,975	5,016	25,750	13,412	9,909	4,480	1,770	2,148	126
5	2,313	2,227	393	1,829	3,034	24,730	11,799	10,374	3,417	2,841	2,374	221
6	2,151	1,454	2,682	1,669	2,996	21,774	11,266	10,966	4,898	2,129	2,080	2,370
7	2,056	212	2,671	2,145	4,880	21,182	12,915	9,630	3,757	2,119	3,103	2,108
8	2,221	2,001	2,657	1,761	3,771	21,677	13,361	7,880	4,832	2,059	3,531	2,300
9	1,507	2,072	2,442	257	4,014	21,685	11,618	7,904	5,862	1,425	2,543	3,239
10	101	1,965	2,606	2,481	4,205	18,476	9,586	7,413	5,495	1,085	2,050	2,254
11	1,914	1,944	1,738	2,511	4,225	16,030	9,020	7,167	4,684	3,139	2,173	1,489
12	2,046	1,893	253	2,485	2,730	13,427	7,777	6,928	5,310	2,450	2,191	2,817
13	2,159	1,341	2,451	2,520	2,696	11,990	7,015	6,378	7,815	2,364	1,597	2,492
14	2,040	143	2,737	2,665	4,931	12,531	6,070	5,282	8,036	2,279	358	2,315
15	2,124	1,750	3,263	1,753	4,091	12,052	5,406	4,853	7,228	2,316	2,613	2,119
16	1,668	1,731	3,441	395	3,689	11,468	5,056	5,970	6,005	1,511	2,617	1,948
17	125	1,859	3,665	3,032	3,712	10,727	4,871	5,175	5,307	128	2,140	1,165
18	2,011	1,870	2,256	2,817	4,100	11,661	5,958	4,767	5,009	1,916	2,171	166
19	1,855	1,882	666	2,756	2,783	10,965	5,170	4,941	5,674	1,956	2,746	1,962
20	1,778	1,124	3,729	2,901	2,807	8,189	8,898	5,129	7,046	1,952	1,776	2,061
21	1,825	90	3,043	2,937	4,991	10,016	11,276	5,398	5,974	1,956	289	2,048
22	1,899	1,830	2,763	5,588	4,771	10,825	10,911	5,175	5,075	1,916	2,823	2,004
23	1,159	1,897	2,545	14,245	5,209	11,583	10,207	6,092	4,499	1,201	2,708	1,988
24	116	1,993	2,280	18,698	5,817	11,842	12,315	5,367	3,759	140	2,384	1,233
25	2,048	358	321	15,123	5,908	12,725	11,759	5,097	2,236	1,978	2,033	137
26	2,230	2,145	446	11,927	5,055	16,044	10,211	4,714	2,318	2,312	2,229	1,898
27	2,353	1,622	2,461	10 059	4,712	20,231	12,793	4,774	4,341	2,185	1,340	2,012
28	2,453	1,097	2,216	8,351	8,307	18,353	20,526	4,465	3,491	1,968	120	1,956
29	2,054	4,368	2,138	7,330	.....	16,011	18,118	4,267	3,291	1,484	1,320	2,041
30	1,180	3,175	2,053	6,620	.....	15,394	13,980	3,953	2,730	1,055	1,396	2,029
31	138	.....	2,050	7,421	.....	17,953	.....	5,385	.....	351	1,486	.....
1910–11.												
1	1,224	1,452	2,490	560	3,178	3,445	16,615	15,424	3,231	1,414	2,268	2,798
2	136	1,370	2,467	3,460	2,952	3,442	12,196	14,811	2,860	497	2,460	1,792
3	1,848	1,563	1,483	3,210	2,552	3,192	10,369	15,431	1,717	894	2,458	1,361
4	1,795	1,869	110	4,127	1,453	1,982	8,330	13,484	782	117	2,282	1,376
5	1,818	1,515	1,961	4,817	670	658	7,547	10,063	3,312	1,401	1,559	3,299
6	1,810	2,005	1,948	5,819	3,461	3,314	7,673	7,667	3,105	1,891	186	2,328
7	1,831	4,555	1,969	4,356	3,311	2,809	12,968	6,445	2,922	1,456	1,642	2,170
8	1,146	4,144	1,988	3,321	2,967	2,520	17,999	7,238	2,880	925	1,611	2,103
9	163	3,402	1,915	4,831	2,705	2,513	18,741	6,306	2,863	208	1,746	1,289
10	1,848	3,172	1,139	3,829	2,642	2,483	18,171	6,553	1,907	2,627	1,749	115
11	2,068	3,046	87	3,312	1,614	1,531	15,788	6,605	1,593	2,222	1,908	1,876
12	1,218	1,870	1,588	3,107	177	416	14,138	6,220	3,581	1,921	1,156	2,356
13	1,970	442	1,389	3,196	2,447	2,536	13,179	4,965	3,132	1,740	51	2,478
14	1,821	3,042	1,345	2,014	2,233	2,696	13,513	5,247	2,983	1,354	1,285	2,651
15	1,123	2,676	1,355	629	2,237	5,704	15,624	6,507	4,087	931	1,156	2,568
16	111	2,546	1,359	3,625	2,310	12,451	19,189	5,325	4,551	114	1,552	1,449
17	1,710	2,486	797	2,955	2,276	8,511	20,369	4,565	1,763	1,345	1,543	182
18	1,632	2,275	81	2,500	1,402	5,403	16,707	3,702	369	928	1,598	2,595
19	1,630	1,192	1,365	2,437	181	5,041	13,561	3,864	2,519	851	1,138	2,887
20	1,592	173	1,392	2,274	2,437	6,414	12,687	2,367	2,722	964	206	2,618
21	1,651	1,792	1,377	1,558	2,419	4,626	12,610	2,539	2,615	987	1,577	2,330
22	1,003	2,185	1,389	173	2,385	4,858	12,132	4,713	2,510	804	1,729	2,187
23	105	2,195	1,414	1,977	2,342	4,883	11,085	3,323	2,346	98	1,687	1,274
24	1,551	517	948	2,319	2,306	5,023	10,978	3,144	1,622	1,296	1,316	164
25	1,380	2,091	421	2,264	1,539	2,973	9,992	3,036	343	1,441	1,423	1,831
26	1,429	1,427	464	2,283	155	3,058	11,277	3,261	2,437	1,700	976	2,108
27	1,573	183	2,856	2,195	2,606	5,637	12,340	2,160	2,555	1,413	168	2,219
28	1,727	1,982	2,393	1,807	3,622	10,595	13,568	3,110	2,296	1,897	1,538	2,262
29	1,000	2,156	2,446	1,081	.....	15,824	14,125	3,259	2,294	1,306	1,719	2,162
30	94	2,266	2,968	3,738	.....	17,649	14,262	2,297	1,961	200	1,850	1,421
31	1,560	.....	1,949	3,460	.....	20,918	.....	4,354	.....	1,954	1,952	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1911-12.												
1	116	4,008	7,756	5,300	2,962	4,511	25,394	9,910	15,218	2,359	2,384	231
2	2,420	3,836	5,789	4,715	3,075	3,171	24,821	9,584	14,985	2,622	2,263	500
3	2,685	3,703	4,769	5,053	2,251	2,195	24,771	9,032	13,631	2,561	1,452	2,848
4	2,747	2,829	5,886	4,706	1,527	4,735	22,306	7,384	12,727	500	196	2,771
5	2,695	2,452	4,860	4,608	3,894	3,525	18,986	7,205	11,840	2,268	2,476	2,720
6	3,611	4,466	3,853	2,728	3,277	3,345	17,881	8,471	10,236	1,539	2,784	2,619
7	3,374	3,662	4,005	2,039	3,028	3,286	20,440	7,886	8,946	384	2,664	1,877
8	2,314	3,843	4,046	4,547	2,855	3,447	26,173	9,899	7,367	1,941	2,648	342
9	4,529	4,844	2,513	3,946	2,954	2,751	30,720	10,465	6,880	1,738	2,581	2,841
10	3,259	5,344	2,596	3,003	2,297	2,118	26,689	11,063	7,744	2,080	1,539	2,904
11	3,080	3,650	4,944	3,291	1,003	4,944	21,254	10,683	5,290	2,131	187	2,758
12	1,349	3,118	4,236	3,275	3,522	4,428	18,416	9,901	4,936	1,931	2,297	2,143
13	4,304	5,282	3,953	2,433	2,962	6,562	16,678	10,269	4,554	1,189	4,160	2,004
14	2,130	4,060	4,773	1,452	2,826	10,091	15,709	9,961	4,519	219	4,670	1,318
15	259	4,603	5,832	4,021	2,716	16,600	16,201	11,331	2,879	1,987	3,580	175
16	2,964	5,352	4,402	3,383	2,814	23,200	15,672	10,767	2,641	2,249	3,264	2,351
17	2,781	5,121	4,362	3,231	2,216	25,012	17,604	10,878	5,139	2,141	1,891	2,659
18	2,540	4,486	6,637	2,920	851	26,067	22,816	14,212	3,853	1,992	345	2,690
19	2,813	5,092	5,999	3,373	3,190	25,863	23,500	14,444	3,197	2,131	3,087	2,694
20	6,325	7,476	5,325	2,514	3,144	25,262	22,394	12,699	3,625	1,464	2,896	2,978
21	9,256	6,889	4,664	3,041	3,231	25,017	20,089	10,909	3,975	213	2,462	1,987
22	7,407	6,181	4,298	4,814	2,742	21,445	17,964	11,087	2,556	2,361	2,272	577
23	8,308	5,539	3,971	4,539	5,339	18,030	16,689	13,252	796	2,309	2,299	4,005
24	8,166	5,085	10,202	4,310	3,848	15,546	18,622	13,215	3,892	2,486	1,474	3,318
25	8,256	4,377	13,931	4,085	3,758	12,967	18,508	12,250	3,284	2,713	277	2,971
26	6,747	4,840	11,878	4,150	5,964	11,425	14,552	11,143	3,108	2,878	2,857	2,913
27	5,685	6,285	9,583	2,550	5,098	10,888	12,877	10,662	2,939	1,753	2,296	3,008
28	4,461	5,388	8,675	2,462	4,812	10,650	11,972	9,219	2,386	175	2,187	1,959
29	3,404	4,895	6,260	4,376	4,518	13,241	12,994	8,234	1,620	2,227	2,179	285
30	5,057	3,902	4,608	3,453	.....	23,802	10,940	6,945	201	2,189	2,169	2,422
31	3,895	.....	3,709	3,104	.....	26,509	.....	11,325	.....	2,259	1,282	.....
1912-13.												
1	2,827	4,314	2,995	9,087	5,066	4,557	17,983	9,170	11,599	2,619	1,818	492
2	2,371	2,999	5,197	10,140	5,800	6,124	20,694	8,111	10,178	2,589	1,183	2,809
3	2,452	3,265	3,899	9,490	7,152	7,074	17,083	6,771	8,278	2,407	160	2,421
4	2,606	5,953	4,142	9,877	6,086	6,415	14,120	5,924	7,215	600	1,817	2,195
5	1,855	4,835	6,891	11,233	5,726	5,965	12,483	6,846	6,531	526	1,880	2,070
6	175	4,434	6,607	11,727	5,177	5,662	12,578	5,990	5,965	586	1,854	1,243
7	2,600	4,185	6,054	9,570	4,838	4,981	13,075	5,793	4,495	3,112	1,897	171
8	2,769	4,190	7,122	8,889	3,149	3,392	11,785	5,501	4,014	2,708	1,962	1,783
9	2,429	9,931	7,540	6,974	3,409	2,988	10,486	5,369	5,378	2,501	1,306	1,788
10	2,363	11,667	6,002	6,471	5,393	6,200	9,480	3,972	4,153	2,151	198	1,760
11	2,480	9,059	5,274	6,045	4,320	6,306	8,947	3,662	3,736	1,909	1,966	1,758
12	328	6,972	4,999	6,137	3,448	7,167	9,499	5,530	3,605	1,574	1,743	1,790
13	223	6,066	4,703	7,737	3,513	8,112	12,129	4,205	3,585	247	1,730	1,098
14	2,359	5,639	2,723	7,019	3,688	8,085	14,511	3,688	2,270	2,185	1,746	114
15	2,482	6,126	2,387	6,974	2,553	12,403	14,723	3,258	1,325	2,319	1,828	1,548
16	2,426	7,397	5,105	6,637	1,731	22,790	13,997	4,123	3,898	2,227	1,076	1,482
17	2,696	6,927	4,149	6,330	4,871	27,272	13,112	2,657	3,282	2,257	166	1,460
18	2,757	6,982	3,892	5,914	3,872	21,775	11,783	3,104	2,766	2,399	1,687	1,412
19	1,797	5,897	4,142	7,321	3,517	16,896	10,225	5,006	2,737	1,626	1,678	1,485
20	186	5,436	4,705	9,849	3,314	14,750	9,141	3,724	2,851	247	1,750	1,046
21	2,192	5,016	4,880	9,882	3,192	16,910	9,827	3,742	2,460	2,132	1,826	161
22	2,070	4,407	4,951	9,277	1,964	23,190	8,643	3,881	621	1,956	1,816	1,591
23	2,049	2,881	5,821	9,161	4,749	27,538	8,114	4,185	4,141	1,864	1,234	1,904
24	2,508	3,011	4,517	8,530	7,094	20,547	7,678	4,806	3,063	1,640	303	3,110
25	6,075	5,294	1,926	7,983	6,336	16,431	7,790	10,494	2,689	1,699	1,417	4,713
26	12,358	4,939	4,788	7,448	5,405	19,380	7,076	12,365	2,624	1,206	1,379	3,495
27	9,234	5,388	4,199	8,142	4,647	31,321	7,097	10,877	2,477	99	1,315	2,123
28	8,185	3,703	2,864	6,982	5,015	34,757	8,220	9,188	2,036	1,834	1,333	296
29	6,356	5,585	3,276	6,240	.....	37,040	8,021	9,527	384	1,632	1,452	2,432
30	5,392	3,479	6,059	5,716	.....	25,651	8,976	14,790	2,598	1,780	859	2,304
31	4,716	.....	6,676	5,447	.....	19,650	.....	15,105	.....	1,828	158	.....

Daily discharge, in second-feet, of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1913–14.												
1	1,939	3,910	5,071	3,974	4,683	3,222	22,560	26,292	5,953	2,878	1,393	4,106
2	2,102	3,516	4,142	3,738	5,863	11,610	24,260	22,902	3,770	3,006	124	3,675
3	2,724	5,332	3,973	2,626	5,189	25,200	31,072	18,683	3,603	3,037	2,214	3,142
4	1,899	4,226	4,125	1,830	6,056	32,600	28,823	17,110	3,596	630	2,264	2,793
5	1,439	3,845	4,490	4,807	7,324	30,750	23,094	16,528	4,087	1,945	2,389	1,877
6	3,986	3,612	3,256	4,084	7,005	28,890	20,545	18,386	4,423	4,017	2,531	1,373
7	3,211	3,634	3,715	3,825	5,609	23,360	17,628	20,322	5,496	3,177	2,360	1,655
8	2,873	2,458	6,435	3,786	5,029	19,397	16,730	19,438	5,771	3,287	1,393	3,244
9	2,333	1,301	7,992	3,821	6,448	16,720	18,783	17,059	5,049	3,172	175	2,831
10	2,625	4,980	8,310	2,614	5,354	15,785	24,844	16,307	4,061	3,154	2,128	2,641
11	2,021	10,092	7,062	1,723	4,751	12,938	24,915	16,487	3,963	1,982	2,127	2,290
12	260	9,799	6,273	4,733	4,622	11,331	21,411	14,787	3,562	2,099	2,100	1,317
13	688	7,054	4,607	3,299	4,207	10,128	20,844	14,504	2,279	4,396	2,184	140
14	3,084	5,808	4,259	3,139	2,932	8,976	19,866	16,131	1,171	3,848	2,140	2,243
15	3,058	4,295	6,059	3,037	2,163	8,637	17,744	16,221	4,595	3,458	1,449	2,233
16	3,183	3,371	5,026	2,793	4,771	8,533	16,686	14,327	3,007	2,701	144	2,210
17	2,933	5,402	4,615	2,207	3,921	8,545	17,308	12,322	2,601	2,420	2,334	2,158
18	2,155	4,377	4,677	541	3,805	8,775	17,322	11,541	2,935	1,572	2,460	2,066
19	371	3,642	4,688	3,410	3,680	9,939	17,635	10,493	3,034	427	2,462	1,234
20	2,995	3,685	2,763	2,825	3,883	9,012	19,289	9,926	2,059	2,706	2,435	186
21	3,731	4,030	2,024	2,918	2,709	7,318	28,823	9,429	603	2,780	2,407	2,079
22	5,228	3,818	5,136	3,142	2,480	7,275	37,144	8,894	3,828	2,724	1,564	2,059
23	6,568	3,695	4,234	3,277	3,298	8,156	29,322	8,053	2,978	2,575	585	1,968
24	5,136	5,341	4,022	2,236	5,147	6,885	21,401	7,338	2,680	2,456	3,269	1,993
25	3,322	4,373	2,435	1,484	3,396	7,093	17,157	8,079	2,737	1,710	2,827	1,946
26	4,333	3,773	6,024	4,562	3,342	7,354	15,161	6,672	2,765	131	2,761	1,163
27	8,190	1,350	3,973	4,311	3,642	10,579	19,768	5,975	1,816	2,322	2,567	137
28	8,083	4,725	3,290	4,810	2,573	18,627	26,938	5,382	435	2,266	2,446	1,696
29	7,599	2,818	5,510	4,877	.....	26,545	27,340	5,366	2,938	2,269	1,569	1,648
30	6,402	2,288	4,476	5,188	.....	27,742	26,282	3,824	2,951	2,197	402	1,635
31	5,649	.....	4,112	5,182	.....	24,470	.....	4,106	.....	2,322	3,134	.....
1914–15.												
1	1,674	143	2,339	1,655	5,069	20,559	4,660	6,784	4,089	2,681	5,333	4,470
2	1,726	1,718	2,317	1,167	4,098	14,444	4,449	11,227	3,299	3,172	6,352	4,221
3	938	1,736	2,488	250	3,648	11,321	3,679	11,020	3,077	4,797	6,025	3,977
4	119	1,768	2,726	1,855	3,291	9,971	4,090	9,462	2,676	10,559	7,765	3,083
5	1,706	1,770	1,887	1,867	3,299	8,539	5,608	8,362	1,799	10,635	15,635	2,586
6	1,694	1,729	710	1,794	2,431	7,427	5,104	7,476	428	9,266	21,786	2,343
7	1,690	1,006	3,656	2,531	1,701	6,967	5,461	6,666	2,302	7,845	18,978	4,498
8	1,708	119	2,919	3,533	5,285	7,918	6,298	5,869	2,411	6,774	15,753	3,884
9	1,736	1,698	2,673	4,226	4,600	6,106	6,843	5,358	2,540	15,303	15,118	2,633
10	980	1,724	2,424	4,300	4,897	6,593	7,736	6,802	2,536	29,926	14,443	2,878
11	113	1,655	2,199	5,178	4,664	6,325	8,790	5,912	2,226	22,714	13,451	1,949
12	69	1,647	1,550	4,211	4,383	6,088	14,045	5,446	1,335	16,713	11,503	896
13	1,660	1,744	458	4,270	3,022	4,685	20,562	5,035	152	12,342	10,060	3,884
14	1,730	1,008	2,638	4,462	2,901	4,548	18,707	4,902	2,238	9,327	8,902	3,206
15	1,719	125	2,980	4,371	5,179	6,321	14,274	3,651	2,389	7,865	8,449	2,809
16	1,682	1,770	2,627	2,823	5,083	5,295	11,538	3,610	2,453	7,114	9,027	2,700
17	1,028	1,796	2,377	1,961	6,750	4,466	9,608	5,418	2,065	5,835	9,209	2,792
18	126	1,885	2,371	5,351	8,218	4,666	8,536	4,352	1,919	5,143	7,929	1,989
19	1,732	2,553	1,451	10,376	8,202	4,761	8,227	3,868	1,221	5,907	6,982	487
20	1,912	2,801	192	13,364	8,090	3,581	8,140	3,745	947	5,218	6,180	2,684
21	1,883	1,924	2,028	13,589	6,080	3,650	7,269	3,617	3,224	4,791	4,595	2,929
22	1,830	696	2,178	10,991	6,030	5,520	6,730	2,693	2,875	4,553	3,819	2,669
23	1,817	3,035	2,195	7,688	7,560	4,794	6,554	1,876	2,740	4,517	5,783	2,816
24	997	2,870	2,119	6,546	7,150	4,617	4,943	4,470	2,829	3,664	9,142	3,771
25	115	2,873	541	7,349	9,100	4,828	4,648	3,365	2,508	3,096	10,347	2,808
26	1,783	947	953	6,287	26,300	5,428	6,260	3,158	1,542	4,603	8,260	1,960
27	1,837	1,611	149	5,649	39,200	5,691	6,643	3,209	408	4,420	7,440	4,289
28	1,720	978	2,069	5,250	27,054	5,313	7,441	3,087	2,570	5,168	5,793	3,121
29	1,692	132	2,031	2,991	.....	6,100	6,687	2,007	2,539	6,085	4,592	2,870
30	1,707	2,956	1,967	3,432	.....	5,451	6,068	1,587	2,341	6,650	5,286	2,889
31	974	.....	2,053	2,813	.....	5,059	.....	2,174	.....	6,200	4,470	.....

NOTE.—The above table shows the actual flow at Lawrence; not corrected for water wasted by the Metropolitan Water and Sewerage Board.

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915.

[Weeks arranged in order of dryness.]

Week ending Sunday.	Mean discharge in second-feet. Measured at Lawrence (total drainage area, 4,663 square miles).[a]	Wasting into Merrimack River from diverted drainage basins.[b]	From net drainage basins.[c]	Per square mile of net drainage area.[c]
1880.[d]				
Sept. 12	2,175	3	2,172	0.476
26	2,247	3	2,244	.491
5	2,291	4	2,287	.501
19	2,336	3	2,333	.511
Aug. 22	2,357	2	2,355	.516
29	2,494	3	2,491	.545
June 27	2,496	4	2,492	.546
Aug. 15	2,544	3	2,541	.556
July 18	2,557	4	2,553	.559
4	2,584	3	2,581	.565
Aug. 8	2,801	10	2,791	.611
July 11	2,951	3	2,948	.646
Aug. 1	2,951	3	2,948	.646
June 20	3,133	4	3,129	.685
May 30	3,309	4	3,305	.724
July 25	3,511	5	3,506	.768
June 13	3,547	4	3,543	.776
6	3,689	5	3,684	.807
May 23	4,159	5	4,154	.910
Jan. 18	5,111	51	5,060	1.108
May 16	5,140	20	5,120	1.121
Jan. 4	5,207	11	5,196	1.138
11	5,263	40	5,223	1.144
25	6,054	132	5,922	1.297
Apr. 4	6,679	137	6,542	1.432
Mar. 28	7,326	132	7,194	1.575
21	7,406	168	7,238	1.585
May 9	8,316	102	8,214	1.799
Apr. 18	8,321	87	8,324	1.803
May 2	8,404	54	8,350	1.828
Feb. 15	9,384	264	9,120	1.997
29	9,480	155	9,325	2.042
Apr. 25	0,333	110	10,223	2.239
Mar. 14	1,859	133	11,726	2.568
Feb. 8	1,934	53	11,881	2.602
1	16,687	163	16,524	3.618
Mar. 7	17,804	182	17,622	3.859
Feb. 22	17,834	249	17,585	3.851
Apr. 11	18,703	168	18,535	4.059

Week ending Sunday.	Mean discharge in second-feet. Measured at Lawrence (total drainage area, 4,663 square miles).[a]	Wasting into Merrimack River from diverted drainage basins.[b]	From net drainage basins.[c]	Per square mile of net drainage area.[c]
1880-81.				
Oct. 17	1,583	3	1,580	0.346
24	1,653	3	1,650	.361
10	1,782	3	1,779	.390
3	1,929	3	1,926	.422
Jan. 9	1,942	2	1,940	.425
Sept. 4	2,238	2	2,236	.489
Jan. 2	2,244	3	2,241	.491
July 24	2,255	3	2,252	.493
Aug. 21	2,257	2	2,255	.493
Oct. 31	2,237	3	2,284	.500
Sept. 25	2,306	2	2,304	.504
Feb. 6	2,316	2	2,314	.506
Aug. 28	2,346	2	2,344	.513
Dec. 26	2,430	2	2,428	.532
Jan. 16	2,454	0	2,454	.537
July 17	2,493	18	2,475	.542
Jan. 23	2,531	3	2,528	.553
30	2,531	2	2,529	.553
Sept. 11	2,578	2	2,576	.564
18	2,657	2	2,655	.581
Dec. 5	2,683	3	2,680	.587
Nov. 28	2,806	3	2,803	.614
Dec. 19	2,810	3	2,807	.615
12	2,839	3	2,836	.621
July 10	3,055	25	3,030	.663
Aug. 14	3,061	3	3,058	.669
Feb. 13	3,117	25	3,092	.677
Nov. 21	3,300	3	3,297	.722
Aug. 7	3,645	3	3,642	.797
June 26	3,744	40	3,704	.811
July 3	4,380	34	4,346	.951
Feb. 27	5,021	137	4,884	1.069
Nov. 14	5,287	3	5,284	1.157
July 31	5,456	3	5,453	1.193
June 12	5,686	265	5,421	1.186
Nov. 7	5,851	3	5,848	1.280
June 19	6,028	175	5,853	1.281
5	6,121	72	6,049	1.324
Feb. 20	8,387	200	8,817	1.791
Apr. 10	8,925	124	8,801	1.926
3	9,572	221	9,351	2.046
May 8	11,618	58	11,560	2.530
29	11,742	81	11,661	2.552
Mar. 6	13,065	383	12,682	2.775
May 15	13,152	45	13,107	2.868
Mar. 27	15,543	397	15,146	3.314
Apr. 17	17,964	205	17,759	3.886
Mar. 20	19,488	447	19,041	4.167
Apr. 24	20,015	139	19,876	4.349
May 1	20,726	85	20,641	4.517
22	22,150	139	22,011	4.817
Mar. 13	23,091	741	22,350	4.891
The year	6,445	80	6,365	1.390

[a] In July, 1909, Dug Pond, in Lake Cochituate drainage basin, was diverted to Charles River, thus artificially reducing the drainage area 1 square mile. Prior to July, 1909, the total drainage area was 4,664 square miles.

[b] Prior to Jan. 1, 1881, the diverted drainage area from which discharge wasted into the Merrimack was 97 square miles; Jan. 1, 1881, to Mar. 6, 1898, 94 square miles; Mar. 7, 1898, to June 30, 1909, 212 square miles; July 1, 1909, to Sept. 30, 1915, 211 square miles.

[c] Prior to Jan. 1, 1881, the net drainage area was 4,567 square miles; Jan. 1, 1881, to Mar. 6, 1898, 4,570 square miles; Mar. 7, 1898, to Sept. 30, 1915, 4,452 square miles.

[d] Jan. 1 to Sept. 30.

NOTE.—Estimates of discharge wasted from diverted drainage area based on data furnished by the Metropolitan Water Board of Boston.

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1881–82.				
Sept. 3	1,900	2	1,898	0.415
10	1,938	2	1,936	.424
Aug. 27	2,070	2	2,068	.453
20	2,078	2	2,076	.454
6	2,184	2	2,182	.477
Oct. 16	2,207	2	2,205	.483
Aug. 13	2,241	2	2,239	.490
Sept. 17	2,258	2	2,256	.491
July 30	2,272	2	2,270	.497
Oct. 9	2,369	2	2,367	.518
2	2,492	2	2,490	.545
30	2,688	2	2,686	.588
23	2,905	2	2,903	.635
Sept. 24	2,920	2	2,918	.639
July 23	2,932	2	2,930	.641
16	3,412	2	3,410	.746
9	3,989	2	3,987	.872
2	4,025	2	4,023	.880
Dec. 18	4,399	3	4,396	.962
Nov. 6	4,532	2	4,530	.991
Feb. 12	5,114	195	4,919	1.076
Jan. 22	5,420	91	5,329	1.166
Nov. 20	5,507	2	5,505	1.205
Jan. 29	5,515	172	5,343	1.169
Nov. 27	5,547	2	5,545	1.213
Dec. 4	5,639	19	5,610	1.228
11	5,855	3	5,852	1.281
Nov. 13	5,864	2	5,862	1.283
June 18	6,301	29	6,272	1.372
May 7	7,028	42	6,986	1.529
14	7,034	66	6,968	1.525
Feb. 5	7,062	137	6,925	1.515
Dec. 25	7,067	34	7,033	1.539
June 25	7,352	23	7,329	1.604
Jan. 15	7,693	92	7,601	1.663
Apr. 30	7,801	66	7,735	1.693
Jan. 8	8,691	37	8,654	1.894
Apr. 23	10,058	3	10,055	2.200
May 21	10,424	195	10,229	2.238
Mar. 26	10,601	158	10,443	2.285
Apr. 16	10,696	37	10,659	2.332
2	12,336	108	12,228	2.676
Feb. 19	12,533	361	12,172	2.664
Apr. 9	12,665	55	12,610	2.759
Feb. 26	12,926	290	12,636	2.765
June 11	13,400	69	13,331	2.917
Mar. 19	13,722	251	13,471	2.948
May 28	14,358	205	14,153	3.097
June 4	17,175	123	17,032	3.731
Mar. 5	19,056	605	18,451	4.037
Jan. 1	19,093	106	18,987	4.155
Mar. 12	22,297	425	21,872	4.786
The year	7,262	78	7,184	1.572

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1882–83.				
Sept. 30	1,110	2	1,108	0.242
16	1,180	2	1,178	.258
23	1,221	2	1,219	.267
9	1,512	2	1,510	.330
2	1,613	2	1,611	.353
Aug. 26	1,637	2	1,635	.358
19	1,737	2	1,735	.380
Jan. 21	1,827	2	1,825	.399
14	1,885	2	1,883	.412
Dec. 3	1,894	2	1,892	.414
Jan. 7	2,095	2	2,093	.458
28	2,119	2	2,117	.463
Dec. 24	2,148	2	2,146	.470
31	2,171	2	2,169	.475
10	2,177	2	2,175	.476
Feb. 4	2,178	2	2,176	.476
Aug. 12	2,189	2	2,187	.479
Dec. 17	2,281	2	2,279	.499
Feb. 11	2,294	2	2,292	.502
Nov. 12	2,317	2	2,315	.507
Aug. 5	2,392	2	2,390	.523
Nov. 19	2,404	2	2,402	.526
26	2,416	2	2,414	.528
Feb. 18	2,460	40	2,420	.530
July 29	2,483	2	2,481	.543
Oct. 15	2,583	2	2,581	.565
Nov. 5	2,628	2	2,626	.575
July 15	2,856	2	2,854	.625
8	2,934	2	2,932	.642
Mar. 18	2,967	165	2,802	.613
Oct. 8	2,989	2	2,987	.654
29	3,040	2	3,038	.665
Mar. 11	3,353	78	3,275	.717
July 1	3,483	3	3,480	.761
Oct. 22	3,705	2	3,703	.810
Mar. 4	3,797	137	3,660	.801
Feb. 25	4,124	87	4,037	.883
Mar. 25	4,275	243	4,032	.882
July 22	4,459	3	4,456	.975
June 10	4,649	20	4,629	1.013
17	4,876	11	4,865	1.065
24	6,367	3	6,364	1.393
Apr. 1	6,383	134	6,249	1.367
May 20	6,609	7	6,602	1.445
June 3	7,039	67	6,972	1.526
May 6	7,767	12	7,755	1.697
Apr. 8	8,351	41	8,310	1.818
Oct. 1	8,660	2	8,658	1.895
May 13	9,361	3	9,358	2.048
27	10,793	230	10,563	2.311
Apr. 29	12,075	68	12,007	2.627
15	20,566	118	20,448	4.474
22	23,469	101	23,368	5.113
The year	4,413	31	4,382	.959

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1883–84.				
Oct. 28	1,683	2	1,681	0.368
7	1,758	2	1,756	.384
Sept. 28	1,783	2	1,781	.390
21	1,797	2	1,795	.393
14	1,807	2	1,805	.395
Dec. 30	1,809	2	1,807	.395
Oct. 21	1,810	2	1,808	.396
14	1,908	2	1,906	.417
Dec. 23	2,091	2	2,089	.457
July 20	2,092	5	2,087	.457
Aug. 24	2,122	5	2,117	.463
31	2,161	3	2,158	.472
Nov. 25	2,162	2	2,160	.473
Aug. 10	2,199	20	2,179	.477
3	2,203	3	2,200	.481
17	2,220	17	2,203	.482
Sept. 7	2,280	2	2,278	.498
Nov. 18	2,318	2	2,316	.507
July 27	2,329	2	2,327	.509
13	2,335	17	2,318	.507
6	2,389	23	2,366	.518
Dec. 16	2,531	2	2,529	.553
Nov. 11	2,550	2	2,548	.558
Dec. 9	2,568	2	2,566	.561
June 29	2,938	14	2,924	.640
22	3,313	13	3,300	.722
Dec. 2	3,695	2	3,693	.808
Nov. 4	3,785	2	3,783	.828
Jan. 6	3,970	2	3,968	.868
27	4,046	2	4,044	.885
June 15	4,321	3	4,318	.945
Feb. 3	4,327	30	4,297	.940
Jan. 20	4,910	2	4,908	1.074
June 8	5,377	6	5,371	1.175
Feb. 10	5,791	74	5,717	1.251
Jan. 13	5,846	2	5,844	1.279
Mar. 9	6,898	177	6,721	1.470
Feb. 17	7,912	262	7,650	1.678
Mar. 16	9,186	556	8,630	1.888
June 1	9,966	81	9,885	2.163
May 18	10,694	107	10,587	2.317
11	10,750	118	10,632	2.326
Mar. 2	11,109	265	10,844	2.373
May 25	11,873	114	11,759	2.573
Mar. 23	12,081	650	11,431	2.501
Feb. 24	15,524	430	15,094	3.303
May 4	16,057	142	15,915	3.482
Apr. 13	22,990	427	22,563	4.937
6	25,457	396	25,061	5.484
27	26,854	247	26,607	5.822
20	33,163	416	32,747	7.166
Mar. 30	34,116	659	33,457	7.321
The year	7,074	102	6,972	1.526

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles.	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1884–85.				
Oct. 26	1,682	2	1,680	0.368
19	1,748	2	1,746	.382
12	1,839	2	1,837	.402
Aug. 2	1,867	2	1,865	.408
Nov. 23	1,874	2	1,872	.410
Oct. 5	1,886	2	1,884	.412
Nov. 2	1,932	2	1,930	.422
16	2,063	2	2,061	.451
Sept. 27	2,086	2	2,084	.456
July 26	2,121	3	2,118	.463
June 28	2,138	3	2,135	.467
Nov. 9	2,266	12	2,254	.493
Mar. 29	2,344	130	2,214	.484
June 21	2,653	3	2,650	.580
Sept. 20	2,718	2	2,716	.594
July 19	2,724	2	2,722	.596
Dec. 7	2,738	2	2,736	.599
Mar. 22	3,367	125	3,242	.709
Feb. 8	3,441	35	3,406	.745
July 5	3,453	3	3,450	.755
Sept. 6	3,481	2	3,479	.761
13	3,554	2	3,552	.777
Mar. 1	3,671	104	3,567	.781
Nov. 30	3,756	2	3,754	.821
Aug. 30	3,786	2	3,784	.828
Jan. 25	3,801	90	3,711	.812
July 12	3,804	5	3,799	.831
Dec. 21	3,856	9	3,847	.842
Mar. 15	4,011	137	3,874	.848
Aug. 23	4,463	2	4,461	.976
Mar. 8	4,496	273	4,223	.924
May 31	4,730	74	4,656	1.019
Feb. 22	4,927	191	4,736	1.036
Jan. 11	5,339	130	5,209	1.140
Feb. 1	5,409	48	5,361	1.173
Dec. 14	5,429	6	5,423	1.187
Feb. 15	5,644	246	5,398	1.181
Jan. 4	5,881	130	5,751	1.258
18	6,101	188	5,913	1.294
June 7	6,160	75	6,085	1.332
14	6,163	57	6,106	1.336
Dec. 28	6,319	143	6,176	1.351
May 24	6,823	156	6,667	1.459
Aug. 9	7,063	2	7,061	1.545
16	7,873	2	7,871	1.722
May 17	8,574	151	8,423	1.843
10	10,393	160	10,233	2.239
Apr. 5	10,510	351	10,159	2.223
19	16,333	138	16,195	3.544
May 3	17,510	233	17,277	3.781
Apr. 26	20,971	59	20,912	4.576
12	21,600	246	21,354	4.673
The year	5,373	72	5,301	1.160

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1885–86.				
Sept. 19	1,788	2	1,786	0.391
12	1,837	2	1,835	.402
5	1,879	2	1,877	.411
Aug. 29	1,909	2	1,907	.417
July 12	1,919	2	1,917	.419
Aug. 15	1,970	2	1,968	.131
8	2,068	2	2,066	.452
Sept. 26	2,090	2	2,088	.457
July 18	2,137	2	2,135	.467
Aug. 1	2,167	2	2,165	.474
22	2,170	2	2,168	.474
Oct. 4	2,221	2	2,219	.486
July 4	2,630	2	2,628	.575
25	2,666	2	2,664	.583
Oct. 11	2,721	2	2,719	.595
18	2,792	2	2,790	.611
June 27	2,830	2	2,828	.619
13	2,997	2	2,995	.655
20	3,667	2	3,665	.802
6	3,911	18	3,893	.852
Nov. 1	4,485	2	4,483	.981
Dec. 6	4,756	103	4,653	1.018
Oct. 25	4,891	2	4,889	1.070
May 30	5,023	25	4,998	1.094
Nov. 29	5,457	204	5,253	1,149
22	6,136	52	6,084	1.331
Dec. 27	6,283	174	6,109	1.337
May 9	6,427	69	6,358	1.391
Dec. 13	7,209	101	7,108	1.555
May 23	7,316	78	7,238	1.584
Jan. 31	7,590	151	7,439	1.628
3	7,996	127	7,869	1.722
Feb. 7	8,227	149	8,078	1.768
Mar. 14	8,266	150	8,116	1.776
21	8,300	223	8,077	1.767
May 16	8,437	101	8,336	1.824
Jan. 24	9,161	88	9,073	1.985
May 2	9,790	61	9,729	2.129
Nov. 8	10,193	16	10,177	2.227
Dec. 20	10,437	237	10,200	2.232
Mar. 28	11,469	330	11,139	2.437
Feb. 14	13,353	772	12,581	2.753
Jan. 17	14,754	70	14,684	3.213
Nov. 15	15,926	138	15,788	3.455
Feb. 28	16,099	385	15,714	3.439
Mar. 7	18,288	167	18,122	3.965
Apr. 25	20,767	116	20,651	4.519
Jan. 10	22,010	209	21,801	4.770
Apr. 18	23,290	195	23,095	5.054
11	26,229	464	25,765	5.638
4	26,767	303	26,464	5.791
Feb. 21	34,286	1,006	33,280	7.282
The year	8,423	122	8,301	1.816

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1886–87.				
Oct. 24	1,786	2	1,784	0.390
17	1,936	2	1,934	.423
10	2,156	2	2,154	.471
31	2,242	2	2,240	.490
3	2,916	2	2,914	.638
Sept. 25	3,178	2	3,176	.695
July 24	3,499	2	3,497	.765
June 19	3,665	8	3,657	.800
July 17	4,003	2	4,001	.875
10	4,006	2	4,004	.876
Jan. 23	4,306	112	4,194	.918
Sept. 18	4,314	2	4,312	.944
Jan. 16	4,333	85	4,248	.930
Dec. 19	4,701	3	4,698	1.028
Sept. 11	4,804	2	4,802	1.051
Nov. 7	4,919	2	4,917	1.076
Dec. 12	4,920	3	4,917	1.076
Nov. 14	5,032	2	5,030	1.101
Aug. 14	5,240	50	5,190	1.136
Jan. 9	5,520	93	5,427	1.188
Dec. 26	5,677	82	5,595	1.224
Mar. 13	6,115	318	5,797	1.268
Dec. 5	6,544	6	6,538	1.431
Aug. 21	6,730	35	6,695	1.465
7	6,939	66	6,873	1.504
Mar. 6	7,196	172	7,024	1.537
May 29	7,269	5	7,264	1.589
Sept. 4	7,366	2	7,364	1.611
July 3	7,560	2	7,558	1.654
May 22	7,645	43	7,602	1.663
Mar. 20	7,724	336	7,388	1.617
June 12	7,926	35	7,891	1.727
Jan. 2	8,231	137	8,094	1.771
Nov. 21	8,711	2	8,709	1.906
28	9,467	2	9,465	2.071
June 26	9,599	5	9,594	2.099
Feb. 20	10,207	293	9,914	2.169
Mar. 27	10,694	397	10,297	2.253
Feb. 27	10,761	428	10,333	2.261
Apr. 3	11,306	462	10,844	2.373
Feb. 13	11,404	186	11,218	2.455
June 5	11,857	76	11,781	2.578
Apr. 10	14,049	365	13,684	2.994
Jan. 30	14,051	896	13,155	2.879
May 15	14,457	102	14,355	3.141
Aug. 28	15,160	13	15,147	3.314
July 31	16,171	31	16,140	3.532
Apr. 24	21,443	240	21,203	4.640
May 8	23,350	220	23,130	5.061
Feb. 6	23,910	411	23,499	5.142
May 1	28,229	383	27,846	6.093
Apr. 17	31,879	281	31,598	6.914
The year	8,813	123	8,690	1.902

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1887–88.				
Aug. 5	2,184	2	2,182	0.477
12	2,251	2	2,249	.492
July 29	2,297	2	2,295	.502
Sept. 9	2,386	10	2,376	.520
July 15	2,400	10	2,390	.523
Sept. 2	2,415	10	2,405	.526
July 22	2,431	2	2,429	.532
Nov. 6	2,523	2	2,521	.552
Oct. 2	2,619	2	2,617	.573
July 8	2,794	16	2,778	.608
Aug. 26	2,804	15	2,789	.610
Nov. 13	2,804	2	2,802	.613
Sept. 16	2,956	19	2,937	.643
Oct. 15	2,975	2	2,973	.651
23	3,053	2	3,051	.668
Aug. 19	3,154	2	3,152	.690
Oct. 30	3,251	2	3,249	.711
June 24	3,491	2	3,489	.763
Mar. 18	3,493	212	3,281	.718
Oct. 9	3,626	2	3,624	.793
Feb. 19	3,749	43	3,706	.811
5	3,818	26	3,822	.836
Mar. 11	3,956	65	3,891	.851
Feb. 12	4,023	52	3,971	.869
June 17	4,504	2	4,502	.985
July 1	4,669	9	4,660	1.020
Jan. 29	4,715	7	4,708	1.030
Dec. 11	4,887	2	4,885	1.069
25	5,051	39	5,012	1.097
Nov. 27	5,244	2	5,242	1.147
20	5,620	2	5,618	1.229
Jan. 22	5,636	29	5,607	1.227
1	5,760	78	5,682	1.243
Dec. 4	6,076	2	6,074	1.329
Jan. 15	6,208	45	6,163	1.349
June 10	7,064	60	7,004	1.533
Sept. 23	9,533	89	9,444	2.067
Dec. 18	9,556	36	9,520	2.083
Jan. 8	9,610	214	9,396	2.056
June 3	11,514	119	11,395	2.493
May 27	12,355	128	12,227	2.675
Mar. 25	13,313	720	12,593	2.756
4	14,877	188	14,689	3.214
Sept. 30	15,367	295	15,072	3.298
Feb. 26	16,339	465	15,874	3.474
Apr. 29	22,057	156	21,901	4.792
1	22,243	646	21,597	4.726
22	22,636	255	22,381	4.897
May 13	23,229	181	23,048	5.043
Apr. 15	25,100	386	24,714	5.408
May 20	25,576	320	25,256	5.526
Apr. 8	28,271	527	27,744	6.071
May 6	29,657	85	29,572	6.471
The year	8,456	108	8,348	1.827

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles.	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1888–89.				
Sept. 8	2,210	16	2,194	0.480
15	2,373	47	2,326	.509
1	2,527	65	2,462	.539
July 14	2,741	9	2,732	.598
21	2,853	26	2,827	.619
June 30	3,070	8	3,062	.670
July 7	3,106	12	3,094	.677
Aug. 25	3,557	161	3,396	.743
June 23	4,133	17	4,116	.901
Mar. 3	4,410	66	4,344	.951
Sept. 29	4,437	91	4,346	.951
Aug. 18	4,493	316	4,177	.914
May 19	4,506	2	4,504	.986
Sept. 22	5,181	145	5,036	1.102
July 28	5,324	39	5,285	1.156
June 2	5,344	117	5,227	1.143
Feb. 17	5,860	79	5,781	1.265
May 12	5,934	16	5,918	1.295
Feb. 24	6,517	176	6,341	1.388
Aug. 11	6,667	198	6,469	1.416
Feb. 10	6,781	128	6,653	1.456
June 16	6,990	24	6,966	1.524
May 26	7,631	90	7,541	1.650
June 9	7,686	213	7,473	1.635
Aug. 4	7,823	262	7,561	1.654
Feb. 3	8,199	224	7,975	1.745
Dec. 16	8,634	245	8,389	1.836
Jan. 27	9,696	259	9,437	2.065
Apr. 28	10,040	125	9,915	2.170
Nov. 11	10,213	200	10,013	2.191
Apr. 21	10,354	95	10,259	2.245
Mar. 17	10,634	118	10,516	2.301
Jan. 6	10,649	230	10,419	2.280
Apr. 7	11,027	200	10,827	2.369
Oct. 7	11,131	230	10,901	2.385
21	11,216	177	11,039	2.416
Mar. 31	11,253	87	11,166	2.443
24	11,343	121	11,222	2.456
Apr. 14	11,369	105	11,264	2.465
Oct. 28	11,594	218	11,376	2.489
Nov. 25	12,000	209	11,791	2.580
May 5	12,099	113	11,986	2.623
Nov. 4	12,663	193	12,470	2.729
Dec. 9	13,050	263	12,787	2.798
Jan. 20	13,594	299	13,295	2.909
Dec. 30	13,991	322	13,669	2.991
Mar. 10	13,996	245	13,751	3.009
Oct. 14	14,311	291	14,020	3.068
Nov. 18	15,239	297	14,942	3.270
Jan. 13	17,431	546	16,885	3.695
Dec. 2	20,684	736	19,948	4.365
23	22,151	689	21,462	4.696
The year	8,860	176	8,684	1.900

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1889–90.				
Aug. 17	1,761	2	1,759	0.385
11	2,216	2	2,214	.484
24	2,243	2	2,241	.490
July 20	2,346	2	2,344	.513
27	2,736	2	2,734	.598
13	3,236	2	3,234	.708
Oct. 27	3,524	120	3,404	.745
July 6	3,596	4	3,592	.786
Aug. 3	3,690	2	3,688	.807
June 29	4,259	11	4,248	.930
Oct. 6	4,740	72	4,668	1.021
Feb. 2	4,761	107	4,654	1.018
Sept. 14	5,056	17	5,039	1.103
Oct. 20	5,526	192	5,334	1.167
Nov. 17	5,694	92	5,602	1.226
Sept. 7	6,006	2	6,004	1.314
Feb. 23	6,161	108	6,053	1.325
9	6,224	152	6,072	1.329
Nov. 3	6,401	128	6,273	1.373
Jan. 26	6,549	110	6,439	1.409
19	6,723	171	6,552	1.434
Sept. 28	7,179	6	7,173	1.570
June 22	7,284	36	7,248	1.586
Jan. 12	7,463	124	7,339	1.606
Aug. 31	7,751	2	7,749	1.696
Oct. 13	8,313	142	8,171	1.788
Nov. 24	8,396	175	8,221	1.799
Feb. 16	8,781	160	8,621	1.886
Jan. 5	9,178	146	9,032	1.976
June 15	9,463	36	9,427	2.063
Nov. 10	9,966	81	9,885	2.163
June 8	10,334	67	10,267	2.247
Dec. 7	10,483	294	10,189	2.230
Mar. 9	11,830	339	11,491	2.514
May 25	12,183	90	12,093	2.646
Dec. 29	12,387	242	12,145	2.658
May 4	12,454	124	12,330	2.698
Apr. 27	12,851	107	12,744	2.789
Dec. 22	13,023	272	12,751	2.790
Mar. 16	13,473	481	12,992	2.843
May 18	14,040	147	13,893	3.040
June 1	14,327	126	14,201	3.107
Mar. 2	14,536	253	14,283	3.125
Dec. 1	14,694	463	14,231	3.114
Mar. 23	15,130	506	14,624	3.200
Apr. 6	15,826	336	15,490	3.389
Sept. 21	16,027	56	15,971	3.495
Dec. 15	16,660	289	16,371	3.582
May 11	17,730	195	17,535	3.837
Apr. 20	19,767	153	19,614	4.292
Mar. 30	20,770	608	20,162	4.412
Apr. 13	22,021	292	21,729	4.755
The year	9,380	147	9,233	2.020

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1890–91.				
Aug. 16	1,976	2	1,974	0.432
Sept. 27	2,116	2	2,114	.463
Aug. 23	2,123	2	2,121	.464
Sept. 20	2,316	2	2,314	.506
Aug. 9	2,336	2	2,334	.511
July 19	2,517	2	2,515	.550
Aug. 2	2,631	2	2,629	.575
Sept. 13	2,923	2	2,921	.639
July 5	3,001	7	2,994	.655
26	3,026	2	3,024	.662
Aug. 30	3,240	2	3,238	.709
July 12	3,289	2	3,287	.719
Sept. 6	3,321	2	3,319	.726
June 21	3,367	5	3,362	.736
14	4,033	9	4,024	.881
Dec. 7	4,856	52	4,804	1.051
June 28	4,930	32	4,898	1.072
Dec. 14	5,047	30	5,017	1.098
May 31	5,074	8	5,066	1.109
Oct. 5	5,106	26	5,080	1.112
June 7	5,979	20	5,959	1.304
Dec. 21	6,169	198	5,971	1.307
Nov. 30	6,373	54	6,319	1.383
Oct. 12	6,567	68	6,499	1.422
Jan. 11	6,783	109	6,674	1.460
May 17	6,964	7	6,957	1.522
Nov. 16	7,250	92	7,158	1.566
May 24	7,820	41	7,779	1.702
Dec. 28	7,894	106	7,788	1.704
May 10	8,473	58	8,415	1.841
Jan. 4	9,326	107	9,219	2.017
Oct. 19	9,520	127	9,393	2.055
Nov. 9	9,551	126	9,425	2.062
Feb. 15	10,040	330	9,710	2.125
Nov. 23	10,817	124	10,693	2.340
May 3	11,254	78	11,176	2.446
Feb. 22	12,424	519	11,905	2.605
8	13,163	450	12,713	2.782
Jan. 18	14,094	521	13,573	2.970
Nov. 2	15,037	297	14,740	3.225
Mar. 8	15,406	509	14,897	3.260
Jan. 25	16,569	705	15,864	3.471
Apr. 12	18,126	382	17,744	3.883
Feb. 1	18,976	387	18,589	4.068
Mar. 1	20,341	560	19,781	4.328
22	21,260	453	20,807	4.553
Apr. 26	22,239	137	22,102	4.836
5	23,271	461	22,810	4.991
Oct. 26	23,979	462	23,517	5.146
Mar. 15	23,993	893	23,100	5.055
Apr. 19	28,729	290	28,439	6.223
Mar. 29	33,057	538	32,519	7.116
The year	9,975	181	9,794	2.143

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1891–92.				
Nov. 8	1,920	2	1,918	0.420
15	1,930	2	1,928	.422
Oct. 4	1,997	2	1,995	.437
11	2,005	2	2,003	.438
18	2,122	2	2,120	.464
Nov. 1	2,136	2	2,134	.467
Oct. 25	2,249	2	2,247	.492
July 31	2,339	2	2,337	.511
Aug. 7	2,390	2	2,388	.523
Nov. 22	2,441	2	2,439	.534
Dec. 20	2,493	2	2,491	.545
July 24	2,591	2	2,589	.567
Dec. 6	2,850	2	2,848	.623
Aug. 14	3,018	2	3,016	.660
Sept. 25	3,149	2	3,147	.689
11	3,281	2	3,279	.718
Feb. 21	3,444	54	3,390	.742
28	3,459	109	3,350	.733
Nov. 29	3,556	2	3,554	.778
July 17	3,586	2	3,584	.784
June 26	3,621	2	3,619	.792
Aug. 21	3,653	2	3,651	.799
June 19	3,763	2	3,761	.823
Dec. 27	3,979	2	3,977	.870
13	4,106	2	4,104	.898
Sept. 18	4,572	2	4,570	1.000
Apr. 24	4,970	2	4,968	1.087
Feb. 14	4,999	57	4,942	1.081
June 12	5,011	4	5,007	1.096
May 1	5,200	2	5,198	1.137
Feb. 7	5,231	70	5,161	1.129
Aug. 28	5,499	2	5,497	1.203
May 15	5,684	13	5,671	1.241
Mar. 6	6,509	103	6,406	1.402
27	6,523	245	6,278	1.374
May 8	6,610	2	6,608	1.446
Mar. 20	6,640	99	6,541	1.431
Jan. 31	6,796	96	6,700	1.466
Apr. 17	6,917	39	6,878	1.505
Mar. 13	7,681	305	7,376	1.614
July 10	8,615	2	8,613	1.885
Jan. 10	8,776	60	8,716	1.907
3	8,963	8	8,955	1.960
17	9,020	172	8,848	1.936
June 5	9,193	36	9,157	2.004
May 22	9,330	164	9,166	2.006
Jan. 24	9,630	247	9,383	2.053
Apr. 3	10,034	168	9,866	2.159
Sept. 4	10,283	2	10,281	2.250
July 3	10,573	2	10,571	2.313
Apr. 10	14,343	94	14,249	3.118
May 29	19,669	281	19,388	4.242
The year	5,564	48	5,516	1.207

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles.	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1892–93.				
Oct. 23	1,964	2	1,962	0.429
Aug. 20	2,029	2	2,027	.444
6	2,043	2	2,041	.447
Oct. 16	2,166	2	2,164	.474
Aug. 13	2,174	2	2,172	.475
Jan. 29	2,179	2	2,177	.476
Oct. 30	2,201	2	2,199	.481
July 30	2,243	2	2,241	.490
Feb. 5	2,257	2	2,255	.493
Oct. 9	2,278	2	2,276	.498
July 23	2,286	2	2,284	.500
16	2,425	2	2,423	.530
Sept. 17	2,430	2	2,428	.531
Jan. 22	2,439	2	2,437	.533
July 9	2,529	2	2,527	.553
Sept. 10	2,659	2	2,657	.581
Nov. 6	2,720	2	2,718	.595
Oct. 2	2,736	2	2,734	.598
Sept. 24	2,807	2	2,805	.614
Jan. 15	2,828	2	2,826	.618
Aug. 27	3,065	2	3,063	.670
Jan. 1	3,447	2	3,445	.754
Dec. 25	3,621	2	3,619	.792
July 2	3,736	2	3,734	.817
June 25	3,818	2	3,816	.835
Mar. 5	3,912	35	3,877	.848
June 18	3,930	2	3,928	.860
Dec. 18	4,058	5	4,053	.887
4	4,166	4	4,162	.911
11	4,227	5	4,222	.924
Mar. 12	4,339	239	4,100	.897
Nov. 13	4,426	2	4,424	.968
Sept. 3	4,513	2	4,511	.987
Feb. 26	4,552	23	4,529	.991
June 11	4,587	3	4,584	1.003
Jan. 8	4,711	4	4,707	1.030
Feb. 12	4,945	71	4,874	1.067
June 4	6,839	32	6,807	1.489
Nov. 27	7,744	12	7,732	1.692
Feb. 19	7,775	120	7,655	1.675
Nov. 20	11,391	2	11,389	2.492
Mar. 26	11,415	244	11,171	2.444
May 28	12,410	116	12,294	2.690
Apr. 2	13,340	271	13,069	2.860
30	14,267	163	14,104	3.086
9	14,711	218	14,493	3.171
23	15,850	250	15,600	3.414
16	18,487	217	18,270	3.998
Mar. 19	19,119	604	18,515	4.051
May 14	20,357	276	20,081	4.394
21	23,167	366	22,801	4.989
7	27,050	542	26,508	5.800
The year	6,565	75	6,490	1.420

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1893–94.				
Sept. 9	1,235	2	1,233	0.270
2	1,526	2	1,524	.333
Aug. 26	1,558	2	1,556	.340
19	1,702	2	1,700	.372
12	1,806	2	1,804	.395
Sept. 16	1,828	2	1,826	.400
Aug. 5	1,889	2	1,887	.413
Oct. 8	2,023	2	2,021	.442
15	2,033	2	2,031	.444
July 29	2,088	2	2,086	.456
22	2,101	2	2,099	.459
Feb. 11	2,194	2	2,192	.480
Sept. 30	2,225	2	2,223	.486
Oct. 1	2,252	2	2,250	.492
Sept. 23	2,334	2	2,332	.510
July 15	2,370	2	2,368	.518
8	2,469	2	2,467	.540
Jan. 28	2,537	2	2,535	.555
Nov. 19	2,739	2	2,737	.599
Jan. 21	2,881	2	2,879	.630
Feb. 4	2,917	2	2,915	.638
July 1	3,060	2	3,058	.669
Nov. 26	3,149	2	3,147	.689
Jan. 7	3,156	2	3,154	.690
Oct. 22	3,192	2	3,190	.698
Jan. 14	3,221	2	3,219	.704
June 24	3,309	2	3,307	.724
Nov. 12	3,319	2	3,317	.726
May 20	3,452	2	3,450	.755
Feb. 18	3,564	2	3,562	.779
June 17	3,939	4	3,935	.861
Dec. 3	4,460	2	4,458	.976
10	4,668	2	4,666	1.021
17	4,740	2	4,738	1.037
24	5,206	2	5,204	1.139
Oct. 29	5,772	2	5,770	1.263
Nov. 5	5,993	2	5,991	1.311
Mar. 4	6,004	82	5,922	1.296
May 13	6,314	2	6,312	1.381
Dec. 31	6,571	2	6,569	1.437
Feb. 25	6,726	16	6,710	1.468
May 27	7,323	13	7,310	1.600
6	8,307	35	8,272	1.810
Apr. 8	8,659	10	8,649	1.893
15	9,381	186	9,195	2.012
June 10	10,421	19	10,402	2.276
Apr. 1	10,824	28	10,796	2.362
22	11,261	176	11,085	2.426
June 3	12,526	83	12,443	2.723
Mar. 25	15,589	51	15,538	3.400
Apr. 29	15,689	94	15,595	3.412
Mar. 18	17,460	98	17,362	3.799
11	18,070	372	17,698	3.873
The year	5,284	25	5,259	1.151

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1894–95.				
Sept. 29	1,544	2	1,542	0.337
22	1,731	2	1,729	.378
8	1,791	2	1,789	.391
15	1,816	2	1,814	.397
Oct. 7	1,847	2	1,845	.404
Sept. 1	1,907	2	1,905	.417
Aug. 18	2,079	2	2,077	.454
July 28	2,101	2	2,099	.459
Oct. 28	2,129	2	2,127	.465
14	2,151	2	2,149	.470
Aug. 11	2,194	2	2,192	.480
Feb 17	2,235	2	2,233	.489
Mar. 3	2,276	2	2,274	.498
Jan. 6	2,283	2	2,281	.499
Feb. 24	2,283	2	2,281	.499
Aug. 4	2,301	2	2,299	.503
June 23	2,314	2	2,312	.506
Aug. 25	2,340	2	2,338	.512
Feb. 10	2,397	2	2,395	.524
Jan. 13	2,487	7	2,480	.543
Dec. 9	2,506	2	2,504	.548
July 21	2,510	2	2,508	.549
Dec. 30	2,595	4	2,591	.567
Nov. 4	2,682	2	2,680	.586
Oct. 21	2,693	2	2,691	.589
Dec. 2	2,748	20	2,728	.597
June 30	2,792	2	2,790	.611
Feb. 3	2,812	19	2,793	.611
July 7	2,843	2	2,841	.622
14	2,846	2	2,844	.622
June 16	2,916	2	2,914	.638
Jan. 27	3,047	44	3,003	.657
Mar. 10	3,285	2	3,283	.718
Nov. 18	3,304	37	3,267	.715
Dec. 16	3,390	3	3,387	.741
Nov. 25	3,475	19	3,456	.756
Jan. 20	3,523	53	3,470	.759
June 9	3,830	4	3,826	.837
Dec. 23	4,003	32	3,971	.869
May 26	4,032	4	4,028	.881
Nov. 11	4,632	23	4,609	1.009
June 2	4,885	3	4,882	1.068
May 19	6,187	2	6,185	1.353
Mar. 17	6,451	241	6,210	1.359
24	6,576	103	6,473	1,416
May 12	7,272	19	7,253	1.587
Apr. 7	7,387	112	7,275	1.592
Mar. 31	8,811	127	8,684	1.900
May 5	9,360	79	9,281	2.031
Apr. 28	14,130	129	14,001	3.064
14	23,043	301	22,742	4.976
21	37,502	445	37,057	8.109
The year	4,621	36	4,585	1.003

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1895–96.				
Sept. 6	1,801	2	1,799	0.394
July 5	1,805	2	1,803	.395
Aug. 23	1,845	2	1,843	.403
30	1,914	2	1,912	.418
July 19	1,921	2	1,919	.420
Oct. 13	1,928	16	1,912	.418
6	2,002	2	2,000	.438
Aug. 2	2,107	2	2,105	.461
July 26	2,134	2	2,132	.467
12	2,170	2	2,168	.474
Aug. 16	2,236	2	2,234	.489
9	2,241	2	2,239	.490
June 28	2,476	2	2,474	.541
Sept. 20	3,102	2	3,100	.678
May 24	3,136	2	3,134	.686
31	3,383	2	3,381	.740
June 21	3,444	2	3,442	.753
Sept. 27	3,568	2	3,566	.780
Feb. 2	3,674	95	3,579	.783
Oct. 27	3,906	27	3,879	.849
Sept. 13	3,921	2	3,919	.858
June 7	4,107	2	4,105	.898
Jan. 26	4,210	74	4,136	.905
May 17	4,228	2	4,226	.925
June 14	4,251	2	4,249	.930
Nov. 3	4,512	86	4,426	.968
Jan. 19	5,182	11	5,171	1.132
Dec. 22	5,480	97	5,383	1.178
May 10	5,919	2	5,917	1.295
Nov. 10	6,120	116	6,004	1.314
Jan. 12	6,346	11	6,335	1.386
Feb. 23	6,993	86	6,907	1.511
Mar. 1	7,035	457	6,578	1.439
Dec. 15	7,399	104	7,295	1.596
Oct. 20	8,205	238	7,967	1.743
Nov. 17	8,460	179	8,281	1.812
May 3	8,604	14	8,590	1.880
Dec. 8	10,383	192	10,191	2.230
Feb. 9	11,559	501	11,058	2.420
Nov. 24	11,693	248	11,445	2.504
Mar. 15	12,400	201	12,199	2.669
Feb. 16	13,272	183	13,089	2.864
Dec. 29	13,454	185	13,269	2.904
1	13,594	279	13,315	2.914
Jan. 5	13,721	152	13,569	2.969
Apr. 12	13,723	125	13,598	2.975
Mar. 22	14,721	533	14,188	3.105
Apr. 26	17,986	76	17,910	3.919
Mar. 29	19,320	286	19,034	4.165
Apr. 5	21,106	328	20,778	4.547
19	25,429	24	25,405	5.559
Mar. 8	39,253	550	38,703	8.469
The year	7,757	106	7,651	1.674

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1896–97.				
Sept. 19	2,519	4	2,515	0.550
26	2,573	5	2,568	.562
Jan. 31	2,716	2	2,714	.594
Sept. 12	2,731	2	2,729	.597
Feb. 7	2,749	2	2,747	.601
Jan. 3	2,756	2	2,754	.603
Oct. 4	2,795	2	2,793	.611
Dec. 27	3,005	2	3,003	.657
Jan. 24	3,005	2	3,003	.657
17	3,217	2	3,215	.704
Oct. 11	3,303	2	3,301	.722
Sept. 5	3,388	3	3,385	.741
Feb. 28	3,934	2	3,932	.860
Aug. 22	4,070	7	4,063	.889
Dec. 20	4,111	5	4,106	.898
Feb. 21	4,332	2	4,330	.947
Aug. 29	4,501	5	4,496	.984
July 11	4,594	7	4,587	1.004
Aug. 15	4,621	23	4,598	1.006
Nov. 22	4,708	14	4,694	1.027
Jan. 10	5,168	9	5,159	1.129
Mar. 7	5,282	4	5,278	1.155
Nov. 29	5,379	18	5,361	1.173
1	5,791	2	5,789	1.267
Dec. 6	5,877	11	5,866	1.284
13	5,882	17	5,865	1.283
July 4	5,977	19	5,958	1.304
Oct. 18	6,080	2	6,078	1.330
Aug. 8	6,760	54	6,706	1.467
Oct. 25	7,036	2	7,034	1.539
Feb. 14	7,267	2	7,265	1.590
Nov. 15	7,855	29	7,826	1.712
May 30	8,128	4	8,124	1.778
June 27	8,346	15	8,331	1.823
Nov. 8	8,628	14	8,614	1.885
June 6	8,782	28	8,754	1.916
May 23	9,060	5	9,055	1.981
Mar. 21	9,635	47	9,588	2.098
July 25	10,261	9	10,252	2.243
Aug. 1	10,395	45	10,350	2.265
May 9	10,701	29	10,672	2.335
Mar. 14	11,206	38	11,168	2.444
May 16	12,684	52	12,632	2.764
2	13,046	8	13,038	2.853
Apr. 4	13,735	74	13,661	2.989
June 20	15,280	47	15,233	3.333
Mar. 28	15,545	236	15,309	3.350
Apr. 25	15,724	17	15,707	3.437
18	19,577	120	19,457	4.258
July 18	20,371	4	20,367	4.457
June 13	20,975	145	20,830	4.558
Apr. 11	21,402	128	21,274	4.655
The year	7,836	26	7,810	1.709

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.				Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.		Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1897–98.					1898–99.				
Oct. 31	2,086	2	2,084	0.456	Sept. 24	1,757	7	1,750	0.393
10	2,241	2	2,239	.490	Aug. 27	1,793	8	1,785	.401
Sept. 25	2,269	19	2,250	.505	Sept. 3	1,848	6	1,842	.414
Oct. 24	2,301	4	2,297	.503	17	1,885	6	1,879	.422
Sept. 18	2,346	40	2,306	.518	Aug. 20	2,127	7	2,120	.476
Oct. 17	2,438	4	2,434	.533	July 9	2,233	9	2,224	.500
July 17	2,494	66	2,428	.545	Aug. 13	2,245	7	2,238	.503
Oct. 3	2,516	5	2,511	.549	Sept. 10	2,251	6	2,245	.504
July 31	2,536	68	2,468	.554	July 23	2,362	6	2,356	.529
Aug. 7	2,584	111	2,473	.555	Aug. 6	2,388	7	2,381	.535
July 24	2,689	56	2,633	.591	July 2	2,438	10	2,428	.545
10	2,732	39	2,693	.605	16	2,741	10	2,731	.613
Sept. 11	2,842	129	2,713	.609	June 25	2,765	8	2,757	.619
Aug. 14	3,422	370	3,052	.686	July 30	2,768	7	2,761	.620
Sept. 4	3,442	218	3,224	.724	June 18	2,818	11	2,807	.631
Aug. 21	3,867	549	3,318	.745	11	3,078	11	3,067	.689
July 3	4,049	92	3,957	.889	Feb. 19	3,933	242	3,691	.829
Nov. 28	5,113	2	5,111	1.118	June 4	3,945	31	3,914	.879
Aug. 28	5,129	409	4,720	1.060	Oct. 2	4,043	47	3,996	.898
Nov. 7	5,145	6	5,139	1.125	Feb. 12	4,145	177	3,968	.891
Dec. 5	5,321	3	5,318	1.164	Oct. 9	4,397	122	4,275	.960
Feb. 6	5,482	208	5,274	1.154	16	4,557	269	4,288	.963
Jan. 2	5,663	3	5,660	1.239	Feb. 5	4,915	248	4,667	1.048
Nov. 14	5,902	10	5,892	1.289	May 28	5,093	70	5,023	1.128
Jan. 9	6,043	2	6,041	1.322	21	6,072	27	6,045	1.358
June 19	6,224	107	6,117	1.374	Feb. 26	6,346	407	5,939	1.334
Feb. 13	6,403	118	6,285	1.375	Oct. 23	6,437	443	5,994	1.346
Nov. 21	6,434	7	6,427	1.406	Dec. 18	6,760	241	6,519	1.464
June 26	6,439	167	6,272	1.409	Mar. 5	7,143	567	6,576	1.477
12	6,507	159	6,348	1.426	Nov. 6	7,209	341	6,868	1.543
Dec. 12	6,632	5	6,627	1.450	Jan. 29	7,241	459	6,782	1.523
Jan. 16	6,849	2	6,847	1.498	1	7,271	243	7,028	1.579
23	8,011	27	7,984	1.747	15	7,324	398	6,926	1.556
May 22	8,837	181	8,656	1.944	Dec. 25	7,374	285	7,089	1.592
Feb. 20	8,860	178	8,682	1.900	4	8,407	603	7,804	1.753
Mar. 6	9,076	549	8,527	1.866	Jan. 8	8,533	667	7,866	1.767
Jan. 30	9,450	57	9,393	2.055	Nov. 13	8,847	578	8,269	1.857
June 5	9,459	289	9,170	2.060	Jan. 22	9,128	496	8,632	1.939
Feb. 27	9,877	690	9,187	2.010	May 14	9,170	112	9,058	2.035
May 15	10,094	187	9,907	2.225	Nov. 20	10,890	673	10,217	2.295
Dec. 26	10,445	46	10,399	2.275	Oct. 30	11,067	523	10,544	2.369
May 29	10,898	375	10,523	2.364	Mar. 12	11,071	882	10,189	2.289
Apr. 10	11,187	257	10,930	2.455	26	11,524	943	10,581	2.377
Mar. 13	11,319	782	10,537	2.367	Dec. 11	12,988	921	12,067	2.710
Apr. 17	11,923	370	11,553	2.595	Nov. 27	13,679	620	13,059	2.933
May 8	12,895	435	12,460	2.799	Apr. 2	13,724	896	12,828	2.881
Apr. 24	14,199	479	13,720	3.082	Mar. 19	15,904	1,164	14,740	3.311
3	18,055	242	17,813	4.001	Apr. 9	17,060	1,097	15,963	3.586
Dec. 19	21,554	112	21,442	4.692	May 7	19,931	165	19,766	4.440
May 1	22,793	870	21,923	4.924	Apr. 16	28,971	1,065	27,906	6.268
Mar. 27	23,529	403	23,126	5.195	30	29,256	343	28,913	6.494
20	29,457	957	28,500	6.402	23	33,512	719	32,793	7.366
The year	7,847	201	7,646	1.695	The year	7,988	331	7,657	1.720

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1899–1900.				
Sept. 16	1,272	8	1,264	0.284
9	1,455	7	1,448	.325
Aug. 12	1,536	7	1,529	.343
Sept. 2	1,628	7	1,621	.364
Oct. 29	1,635	6	1,629	.366
Sept. 23	1,647	7	1,640	.368
Oct. 15	1,678	6	1,672	.376
July 8	1,711	7	1,704	.383
Oct. 22	1,754	6	1,748	.393
July 22	1,810	7	1,803	.405
29	1,836	8	1,828	.411
Sept. 30	1,852	7	1,845	.414
Aug. 5	1,869	7	1,862	.418
Jan. 7	1,921	6	1,915	.430
July 15	1,940	7	1,933	.434
Jan. 14	1,953	6	1,947	.437
Aug. 26	2,016	7	2,009	.451
Oct. 8	2,073	6	2,067	.464
1	2,099	6	2,093	.470
Aug. 19	2,205	8	2,197	.493
Dec. 3	2,221	13	2,208	.496
Jan. 21	2,309	56	2,253	.506
July 1	2,395	11	2,384	.535
Dec. 10	2,435	11	2,424	.544
Nov. 19	2,549	16	2,533	.569
26	2,638	15	2,623	.589
Dec. 31	2,737	56	2,681	.602
June 24	2,935	15	2,920	.656
Nov. 12	2,980	6	2,974	.668
5	3,080	7	3,073	.690
Dec. 24	3,166	35	3,131	.703
17	3,259	13	3,246	.729
June 17	3,699	27	3,672	.825
Feb. 4	4,395	48	4,347	.976
June 3	5,599	101	5,498	1.235
10	5,984	126	5,858	1.316
Jan. 28	6,357	23	6,334	1.423
Feb. 11	6,967	351	6,616	1.486
May 20	8,789	383	8,406	1.888
13	9,757	265	9,492	2.132
Apr. 1	11,444	275	11,169	2.509
May 27	11,481	319	11,162	2.507
Mar. 18	11,517	888	10,629	2.387
May 6	12,439	359	12,080	2.713
Apr. 15	15,905	284	15,621	3.509
Mar. 25	16,397	917	15,480	3.477
Feb. 25	16,431	878	15,553	3.493
Apr. 8	16,621	229	16,392	3.682
Mar. 11	16,748	452	16,296	3.660
Apr. 29	19,770	297	19,473	4.374
22	23,782	448	23,334	5.241
Mar. 4	27,523	1,861	25,662	5.764
Feb. 18	30,374	1,727	28,647	6.435
The year	6,615	201	6,414	1.440

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1900–1901.				
Oct 7	1,931	7	1,924	0.432
Nov. 4	2,100	7	2,093	.470
Mar. 3	2,271	9	2,262	.508
Oct. 28	2,287	7	2,280	.512
Feb. 17	2,359	26	2,333	.524
Sept. 29	2,401	30	2,371	.533
Feb. 24	2,422	13	2,409	.541
10	2,499	24	2,475	.556
July 7	2,550	11	2,539	.570
28	2,565	11	2,554	.574
Sept. 15	2,591	38	2,553	.574
Mar. 10	2,686	13	2,673	.600
Sept. 8	2,746	43	2,703	.607
Oct. 21	2,831	8	2,823	.634
Sept. 22	2,879	46	2,833	.636
Feb. 3	2,936	24	2,912	.654
Oct. 14	2,969	10	2,959	.665
July 21	2,977	11	2,966	.666
Jan. 13	3,211	30	3,181	.715
July 14	3,215	11	3,204	.720
Jan. 27	3,277	28	3,249	.730
Aug. 25	3,304	51	3,253	.731
Jan. 20	3,383	33	3,350	.752
Aug. 4	3,650	51	3,599	.808
June 30	3,833	26	3,807	.855
Jan. 6	3,906	37	3,869	.869
Sept. 1	3,925	73	3,852	.865
Dec. 23	3,947	39	3,908	.878
June 23	4,245	28	4,217	.947
Aug. 18	4,651	26	4,625	1.039
Nov. 25	5,157	9	5,148	1.156
11	5,178	10	5,168	1.161
18	5,335	9	5,326	1.196
Dec. 16	5,660	93	5,567	1.250
30	5,917	44	5,873	1.319
Aug. 11	5,954	41	5,913	1.328
June 16	7,358	86	7,272	1.633
Mar. 17	9,474	350	9,124	2.049
24	9,510	362	9,148	2.055
May 12	10,480	483	9,997	2.246
Dec. 2	10,760	202	10,558	2.372
9	11,399	524	10,875	2.443
June 9	11,684	297	11,387	2.558
May 19	11,689	526	11,163	2.507
5	15,797	714	15,083	3.388
Apr. 21	16,966	540	16,426	3.690
Mar. 31	19,744	703	19,041	4.277
June 2	20,221	1,120	19,101	4.290
May 26	21,258	938	20,320	4.564
Apr. 7	22,439	1,605	20,834	4.680
28	25,445	1,697	23,748	5.334
14	41,490	1,269	40,221	9.034
The year	7,490	238	7,252	1.629

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1901–2.				
Sept. 7	2,382	6	2,376	0.534
Oct. 13	2,387	31	2,356	.529
6	2,463	34	2,429	.546
Nov. 10	2,846	59	2,787	.626
Dec. 8	2,892	62	2,830	.636
Aug. 10	2,921	6	2,915	.655
Nov. 17	2,993	44	2,949	.662
3	3,102	40	3,062	.688
24	3,116	68	3,048	.685
July 20	3,272	8	3,264	.733
Sept. 14	3,347	6	3,341	.750
Dec. 1	3,407	102	3,305	.742
Aug. 24	3,457	6	3,451	.775
3	3,478	6	3,472	.780
31	3,486	12	3,474	.780
Sept. 28	3,516	7	3,509	.788
Feb. 23	3,937	141	3,796	.853
Sept. 21	3,960	7	3,953	.888
Oct. 27	4,057	38	4,019	.903
July 13	4,062	9	4,053	.910
June 15	4,393	8	4,385	.985
Feb. 16	4,708	96	4,612	1.036
May 25	5,103	9	5,094	1.144
July 27	5,116	7	5,109	1.148
6	5,182	7	5,175	1.162
June 29	5,325	8	5,317	1.194
22	5,393	8	5,385	1.210
Jan. 19	5,547	126	5,421	1.218
June 8	5,618	9	5,609	1.260
Aug. 17	5,679	6	5,673	1.274
Dec. 15	5,683	667	5,016	1.127
May 18	6,914	22	6,892	1.548
Feb. 9	7,108	220	6,888	1.547
Jan. 12	7,445	209	7,236	1.625
Dec. 29	7,537	397	7,140	1.604
Oct. 20	7,814	174	7,640	1.716
June 1	10,008	42	9,966	2.239
Feb. 2	10,097	426	9,671	2.172
Apr. 27	10,918	209	10,709	2.405
Jan. 26	12,555	535	12,020	2.700
May 11	12,581	203	12,378	2.780
Mar. 2	15.229	1,956	13,273	2.981
Apr. 20	15,694	360	15,334	3.444
May 4	17,970	415	17,555	3.943
Jan. 5	18,762	1,217	17,545	3.941
Mar. 30	19,710	398	19,312	4.338
Dec. 22	20,794	717	20,077	4.510
Apr. 6	21,367	367	21,000	4.717
13	24,678	1,057	23,621	5.306
Mar. 16	25,204	1,202	24.002	5.391
23	27,235	938	26,297	5.907
9	36,144	1,022	35,122	7.889
The year	8,819	264	8,555	1.922

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1902–3.				
June 7	1,823	4	1,819	0.409
Sept. 27	2,194	11	2,183	.490
20	2,240	17	2,223	.499
13	2,385	16	2,369	.532
May 31	2,482	4	2,478	.557
Sept. 6	2,879	14	2,865	.644
Aug. 23	2,917	16	2,901	.652
30	3,139	25	3,114	.699
July 19	3,150	14	3,136	.704
Aug. 16	3,426	49	3,377	.759
May 24	3,607	6	3,601	.809
Aug. 9	3,736	212	3,524	.792
2	3,978	26	3,952	.888
July 12	4,036	35	4,001	.899
Dec. 14	4,190	58	4,132	.928
June 14	4,335	5	4,330	.973
Nov 30	4,372	45	4,327	.972
May 17	4,590	7	4,583	1.029
Nov. 23	4,929	53	4,876	1.095
Dec. 7	4.948	61	4,887	1.098
Oct. 26	5,090	6	5,084	1.142
19	5,225	6	5,219	1.172
Nov. 16	5,399	7	5,392	1.211
May 10	5,805	9	5,796	1.302
July 26	5,818	48	5.770	1.296
Oct. 12	6,622	7	6,615	1.486
Jan. 18	6,699	122	6,577	1.477
Nov. 9	6,831	14	6,817	1.531
May 3	7,055	36	7,019	1.577
Oct. 5	7,085	6	7,079	1.590
Jan. 25	7,205	170	7,035	1.580
July 5	7,261	159	7,102	1.595
Feb. 1	7,470	278	7,192	1.615
Dec. 21	8,174	322	7,852	1.764
Feb. 22	8,707	324	8,383	1.883
Jan. 4	8,748	275	8,473	1.903
11	9,230	210	9,020	2.026
Mar. 1	10,139	664	9,475	2.128
Feb. 15	10,435	630	9,805	2.202
8	10,487	553	9,934	2.231
Apr. 26	10,850	294	10,556	2.371
Nov. 2	12,386	163	12,223	2.746
June 21	13,146	549	12,597	2.830
Dec. 28	14,683	779	13,904	3.123
Apr. 19	15,947	663	15,284	3.433
12	19,641	865	18,776	4.217
Mar. 8	21,205	561	20,644	4.637
Apr. 5	21,884	856	21,028	4.723
June 28	22,110	1,081	21,029	4.723
Mar. 22	24,347	364	23,983	5.387
29	31,265	1,140	30,125	6.767
15	36,221	1,049	35.172	7.900
The year	8,895	248	8,647	1.942

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.				Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.		Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1903–4.					1904–5.				
Sept. 11	1,887	5	1,882	0.423	Dec. 25	1,540	5	1,535	0.345
Oct. 4	2,083	7	2,076	.466	18	1,663	5	1,658	.372
July 31	2,095	14	2,081	.467	Jan. 1	1,929	5	1,924	.432
Sept. 4	2,107	15	2,092	.470	Dec. 11	1,965	5	1,960	.440
Aug. 21	2,192	23	2,169	.487	July 30	1,971	6	1,965	.441
[illegible]	2,201	19	2,182	.490	Mar. 5	2,151	5	2,146	.482
7	2,237	18	2,219	.498	Feb. 26	2,181	6	2,175	.489
July 24	2,275	15	2,260	.508	19	2,250	45	2,205	.495
Dec. 6	2,427	95	2,332	.524	Aug. 13	2,255	5	2,250	.505
Oct. 11	2,478	7	2,471	.555	July 23	2,303	6	2,297	.516
Feb. 21	2,539	66	2,473	.556	Aug. 27	2,318	6	2,312	.519
July 17	2,559	17	2,542	.571	Feb. 12	2,345	45	2,300	.517
Jan. 24	2,615	42	2,573	.578	Dec. 4	2,366	6	2,360	.530
10	2,626	29	2,597	.583	Nov. 13	2,426	7	2,419	.543
Feb. 14	2,629	58	2,571	.578	Sept. 3	2,507	36	2,471	.555
Dec. 13	2,634	48	2,586	.581	Feb. 5	2,557	40	2,517	.565
Jan. 31	2,719	57	2,662	.598	July 16	2,558	6	2,552	.573
17	2,742	38	2,704	.607	Mar. 12	2,606	15	2,591	.582
Feb. 7	2,745	54	2,691	.604	Nov. 20	2,738	7	2,731	.613
Nov. 15	2,767	29	2,738	.615	27	2,738	5	2,733	.614
29	2,776	41	2,735	.614	Jan. 29	2,849	44	2,805	.630
June 26	2,897	30	2,867	.644	Oct. 16	2,852	6	2,846	.639
Nov. 8	2,901	31	2,870	.645	June 4	2,877	6	2,871	.645
Jan. 3	3,120	31	3,089	.694	Nov. 6	2,935	11	2,924	.657
Nov. 1	3,260	36	3,224	.724	Jan. 8	3,111	52	3,059	.687
Sept. 25	3,318	5	3,313	.744	Aug. 20	3,149	6	3,143	.706
Dec. 20	3,451	12	3,439	.772	June 11	3,152	9	3,143	.706
Feb. 28	3,564	121	3,443	.773	Aug. 6	3,167	6	3,161	.710
July 3	3,589	28	3,561	.800	Oct. 23	3,414	6	3,408	.766
Nov. 22	3,600	61	3,539	.795	June 18	3,423	23	3,400	.764
Aug. 28	3,604	35	3,569	.802	Oct. 9	3,448	5	3,443	.773
July 10	3,753	25	3,728	.837	July 9	3,782	5	3,777	.849
Sept. 18	3,776	6	3,770	.847	Jan. 22	3,892	69	3,823	.858
Mar. 6	4,167	116	4,051	.910	Mar. 19	3,957	84	3,873	.870
June 19	4,172	42	4,130	.928	Oct. 2	3,989	5	3,984	.895
Oct. 25	4,756	63	4,693	1.054	May 28	4,077	12	4,065	.913
18	5,198	26	5,172	1.162	Oct. 30	4,341	5	4,336	.974
June 5	6,308	81	6,227	1.398	July 2	5,180	10	5,170	1.161
Dec. 27	6,378	39	6,339	1.424	May 14	5,502	10	5,492	1.234
June 12	6,945	191	6,754	1.517	June 25	5,616	41	5,575	1.252
Mar. 20	8,309	158	8,151	1.831	May 21	5,758	28	5,730	1.287
13	10,995	311	10,684	2.400	Sept. 17	5,771	6	5,765	1.295
May 29	11,788	76	11,712	2.631	Jan. 15	6,213	112	6,101	1.370
Apr. 24	14,101	199	13,902	3.123	May 7	6,292	6	6,286	1.412
May 15	14,453	438	14,015	3.148	Apr. 30	8,060	27	8,033	1.804
Mar. 27	15,967	256	15,711	3.529	23	9,868	59	9,809	2.203
May 22	19,236	268	18,968	4.261	Mar. 26	10,089	178	9,911	2.226
Apr. 10	20,717	602	20,115	4.519	Sept. 24	10,333	9	10,324	2.319
May 8	22,875	417	22,458	5.044	10	11,484	64	11,420	2.565
Apr. 17	24,517	745	23,772	5.340	Apr. 16	16,864	115	16,749	3.762
3	24,857	240	24,617	5.530	9	22,836	151	22,685	5.095
May 1	26,995	1,506	25,489	5.725	2	40,479	218	40,261	9.043
The year	6,633	133	6,500	1.460	The year	5,272	32	5,240	1.177

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1905–6.				
Sept. 23	1,745	8	1,737	0.390
16	1,804	8	1,796	.403
30	1,890	8	1,882	.423
9	2,145	8	2,137	.480
Aug. 26	2,419	10	2,409	.541
Sept. 2	2,567	9	2,558	.575
Aug. 19	2,753	15	2,738	.615
Nov. 5	2,806	5	2,801	.629
26	2,890	5	2,885	.648
Oct. 8	3,126	72	3,054	.686
15	3,220	9	3,211	.721
29	3,259	5	3,254	.731
22	3,368	7	3,361	.755
Nov. 19	3,490	5	3,485	.783
Feb. 18	3,510	32	3,478	.781
Dec. 3	3,542	6	3,536	.794
Feb. 11	3,561	42	3,519	.790
July 22	3,618	18	3,600	.809
Aug. 12	3,657	37	3,620	.813
July 29	3,770	8	3,762	.845
Dec. 17	4,013	6	4,007	.900
Mar. 25	4,246	128	4,118	.925
Oct. 1	4,376	54	4,322	.971
Dec. 24	4,452	5	4,447	.999
July 15	4,456	29	4,427	.994
Nov. 12	4,691	5	4,686	1.053
Jan. 14	4,706	55	4,651	1.045
Aug. 5	4,948	9	4,939	1.110
May 27	5,344	12	5,332	1.198
Dec. 31	5,529	49	5,480	1.231
Mar. 18	5,608	169	5,439	1.222
Jan. 21	5,893	76	5,817	1.307
Feb. 25	5,981	110	5,871	1.319
4	6,181	59	6,122	1.375
Jan. 7	6,408	82	6,326	1.421
June 17	7,301	27	7,274	1.634
May 20	7,524	18	7,506	1.686
July 8	7,990	61	7,929	1.781
Mar. 4	8,390	148	8,242	1.851
May 6	8,406	14	8,392	1.885
July 1	8,458	23	8,435	1.895
May 13	8,782	14	8,768	1.969
Dec. 10	9,371	6	9,365	2.104
Mar. 11	10,181	248	9,933	2.231
June 10	10,697	51	10,646	2.391
24	10,896	33	10,863	2.440
Apr. 29	11,531	86	11,445	2.571
1	12,315	351	11,964	2.687
Jan. 28	13,675	84	13,591	3.053
Apr. 8	13,936	170	13,766	3.092
15	16,669	281	16,388	3.681
June 3	22,983	181	22,802	5.122
Apr. 22	23,646	167	23,479	5.274
The year	6,580	59	6,521	1.465

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1906–7.				
Sept. 1	1,245	5	1,240	0.278
Aug. 25	1,684	7	1,677	.377
Oct. 7	1,859	8	1,851	.416
14	1,954	10	1,944	.437
Sept. 8	2,042	7	2,035	.457
Aug. 18	2,113	7	2,106	.473
Sept. 22	2,321	8	2,313	.519
Oct. 21	2,327	8	2,319	.521
Dec. 16	2,405	7	2,398	.539
Nov. 11	2,453	7	2,446	.549
Aug. 11	2,454	7	2,447	.550
Dec. 9	2,518	7	2,511	.564
23	2,596	77	2,519	.566
Aug. 4	2,602	8	2,594	.583
Dec. 30	2,632	46	2,586	.581
Mar. 10	2,684	60	2,624	.589
Sept. 15	2,701	8	2,693	.605
Mar. 3	2,714	67	2,647	.595
July 28	2,721	8	2,713	.609
Nov. 18	2,748	36	2,712	.609
Feb. 24	2,927	62	2,865	.643
Nov. 4	2,980	7	2,973	.668
Oct. 28	3,031	7	3,024	.679
Feb. 17	3,039	92	2,947	.662
June 30	3,101	10	3,091	.694
July 21	3,159	7	3,152	.708
Feb. 10	3,181	110	3,071	.690
Dec. 2	3,327	10	3,317	.745
Mar. 17	3,458	80	3,378	.759
July 14	3,468	8	3,460	.777
June 23	3,522	15	3,507	.788
Feb. 3	3,568	78	3,490	.784
Sept. 29	3,842	8	3,834	.861
July 7	3,972	7	3,965	.891
Jan. 20	4,240	85	4,155	.933
Nov. 25	4,347	35	4,312	.968
Jan. 27	4,380	92	4,288	.963
June 2	5,932	71	5,861	1.316
16	6,063	49	6,014	1.351
May 26	7,480	59	7,421	1.667
Jan. 6	8,767	202	8,565	1.924
June 9	8,931	138	8,793	1.975
Jan. 13	9,152	124	9,028	2.028
May 12	9,253	64	9,189	2.064
19	9,271	75	9,196	2.066
Apr. 14	10,937	167	10,770	2.419
Mar. 24	11,093	178	10,915	2.452
Apr. 21	11,336	145	11,191	2.514
28	12,394	112	12,282	2.759
May 5	14,036	91	13,945	3.132
Mar. 31	16,475	119	16,356	3.674
Apr. 7	17,397	97	17,300	3.886
The year	5,093	54	5,039	1.132

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1907–8.				
Sept. 27	1,246	7	1,239	0.278
July 19	1,732	6	1,726	.388
Sept. 20	1,769	7	1,762	.396
13	1,822	8	1,814	.407
6	2,049	6	2,043	.459
July 5	2,151	8	2,143	.481
June 28	2,220	8	2,212	.497
July 12	2,256	7	2,249	.505
Aug. 30	2,407	9	2,398	.539
2	2,427	7	2,420	.544
23	2,704	13	2,691	.604
June 21	2,778	7	2,771	.622
July 26	2,834	6	2,828	.635
Oct. 27	3,215	8	3,207	.720
Aug. 16	3,586	31	3,555	.799
June 14	3,906	16	3,890	.874
Aug. 9	3,982	8	3,974	.893
Oct. 20	4,129	8	4,121	.926
Feb. 9	4,307	109	4,198	.943
Dec. 8	5,490	93	5,397	1.212
Feb. 2	5,959	157	5,802	1.303
Jan. 26	6,030	119	5,911	1.328
Mar. 8	6,059	176	5,883	1.321
Feb. 16	6,306	143	6,163	1.384
Mar. 1	6,519	155	6,364	1.430
May 31	6,583	252	6,331	1.422
Oct. 13	6,764	9	6,755	1.517
Mar. 15	7,515	228	7,287	1.637
Nov. 24	7,603	77	7,526	1.690
June 7	8,171	160	8,011	1.799
Dec. 1	8,377	144	8,233	1.849
Oct. 6	8,715	8	8,707	1.955
May 24	8,735	100	8,635	1.940
Dec. 22	8,746	95	8,651	1.943
Jan. 12	9,671	167	9,504	2.135
Apr. 26	9,861	96	9,765	2.193
19	10,640	138	10,502	2.359
Jan. 19	11,115	209	10,906	2.450
5	11,322	143	11,179	2.511
Apr. 12	11,537	209	11,328	2.544
Dec. 29	11,838	152	11,686	2.625
Nov. 17	12,539	104	12,435	2.793
3	12,644	11	12,633	2.838
Dec. 15	12,757	134	12,623	2.836
Feb. 23	13,394	192	13,202	2.965
May 17	13,785	116	13,669	3.070
Mar. 22	13,880	286	13,594	3.053
May 10	15,354	117	15,237	3.422
3	15,549	29	15,520	3.486
Mar. 29	15,740	327	15,413	3.462
Apr. 5	16,933	404	16,529	3.713
Nov. 10	22,978	85	22,893	5.142
The year	7,704	98	7,606	1.708

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles.	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1908–9.				
Sept. 5	1,321	5	1,316	0.296
Nov. 1	1,365	8	1,357	.305
Dec. 27	1,418	11	1,407	.316
Oct. 11	1,463	7	1,456	.327
4	1,464	7	1,457	.327
Sept. 26	1,468	6	1,462	.328
Nov. 29	1,475	9	1,466	.329
Oct. 25	1,480	7	1,473	.331
18	1,497	7	1,490	.335
Sept. 12	1,592	7	1,585	.356
Nov. 15	1,614	19	1,595	.358
22	1,618	9	1,609	.361
Aug. 22	1,651	8	1,643	.369
Sept. 19	1,661	7	1,654	.372
Aug. 15	1,687	8	1,679	.377
Nov. 8	1,699	23	1,676	.376
Aug. 8	1,789	7	1,782	.400
29	1,849	8	1,841	.414
1	1,870	7	1,863	.418
July 18	1,884	7	1,877	.422
Jan. 3	1,888	14	1,874	.421
July 25	1,909	7	1,902	.427
Dec. 13	1,963	25	1,938	.435
6	1,979	8	1,971	.443
20	2,057	19	2,038	.458
July 11	2,146	7	2,139	.480
Jan. 24	2,338	7	2,331	.524
July 4	2,427	9	2,418	.543
Feb. 7	2,657	22	2,635	.592
Jan. 31	2,933	7	2,926	.657
17	3,328	7	3,321	.746
June 27	3,728	11	3,717	.835
Jan. 10	4,231	21	4,210	.946
June 20	4,259	25	4,234	.951
6	4,525	58	4,467	1.003
13	5,194	24	5,170	1.161
Mar. 21	5,207	114	5,093	1.144
Feb. 21	5,238	199	5,039	1.132
14	5,316	101	5,215	1.171
May 30	5,607	72	5,535	1.246
Mar. 14	6,003	154	5,849	1.314
7	8,011	168	7,843	1.762
May 23	8,391	88	8,303	1.865
16	9,506	102	9,404	2.112
Mar. 28	9,936	228	9,708	2.181
Apr. 4	10,437	186	10,251	2.303
May 9	11,243	120	11,123	2.498
2	11,904	183	11,721	2.633
Apr. 11	13,536	117	13,419	3.014
Feb. 28	15,261	322	14,939	3.353
Apr. 25	18,352	158	18,194	4.087
18	19,737	207	19,530	4.387
The year	4,675	57	4,618	1.037

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1909–10.				
Sept. 4	1,279	5	1,274	0.286
Nov. 21	1,472	9	1,463	.329
Oct. 24	1,520	5	1,515	.340
Nov. 28	1,563	19	1,544	.347
July 24	1,577	6	1,571	.353
31	1,619	5	1,614	.363
Nov. 14	1,623	10	1,613	.362
Sept. 25	1,633	5	1,628	.366
Jan. 9	1,652	50	1,602	.360
Oct. 17	1,725	4	1,721	.387
Nov. 7	1,741	35	1,706	.383
Jan. 2	1,752	15	1,737	.390
Oct. 31	1,779	19	1,760	.395
Sept. 18	1,860	5	1,855	.417
July 10	1,918	25	1,893	.425
Aug. 28	1,948	5	1,943	.436
Sept. 11	1,997	5	1,992	.447
Oct. 10	2,004	4	2,000	.449
July 17	2,027	5	2,022	.454
Aug. 21	2,050	5	2,045	.459
14	2,063	5	2,058	.462
Jan. 16	2,116	63	2,053	.461
Dec. 12	2,150	18	2,132	.479
26	2,161	21	2,140	.481
Aug. 7	2,382	6	2,376	.534
Dec. 5	2,598	19	2,579	.579
19	2,640	39	2,601	.584
July 3	2,749	59	2,690	.604
Oct. 3	2,821	11	2,810	.631
Feb. 20	3,730	148	3,582	.805
13	3,789	109	3,680	.827
June 26	4,415	96	4,319	.970
5	4,421	20	4,401	.989
Jan. 23	4,897	180	4,717	1.060
May 29	4,968	22	4,946	1.111
June 12	4,977	51	4,926	1.106
Feb. 6	5,118	125	4,993	1.122
27	5,209	220	4,989	1.121
May 22	5,222	31	5,191	1.166
June 19	6,439	144	6,295	1.414
Apr. 17	6,459	131	6,328	1.421
May 15	6,558	13	6,545	1.470
Apr. 24	9,248	100	9,148	2.055
May 8	10,117	55	10,062	2.260
Mar. 20	11,085	135	10,950	2.460
Jan. 30	11,185	198	10,960	2.462
Apr. 10	11,994	75	11,919	2.677
Mar. 27	13,324	133	13,191	2.963
May 1	14,182	95	14,087	3.164
Apr. 3	16,570	111	16,459	3.697
Mar. 13	17,781	257	17,524	3.934
6	21,557	517	21,040	4.726
The year	4,994	66	4,928	1.107

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1910–11.				
July 23	854	6	848	0.190
9	985	6	979	.220
Dec. 18	1,131	10	1,121	.252
25	1,187	24	1,163	.261
Aug. 20	1,211	6	1,205	.271
Oct. 30	1,251	5	1,246	.280
Aug. 27	1,268	6	1,262	.283
July 30	1,322	6	1,316	.296
Oct. 23	1,332	8	1,324	.297
Aug. 13	1,409	6	1,403	.315
Oct. 16	1,451	4	1,447	.325
Nov. 27	1,484	11	1,473	.331
Oct. 9	1,487	6	1,481	.333
July 16	1,558	7	1,551	.348
Dec. 11	1,572	17	1,555	.349
Oct. 2	1,614	5	1,609	.361
Nov. 6	1,619	12	1,607	.361
Sept. 10	1,811	3	1,808	.406
Dec. 4	1,851	16	1,835	.412
Sept. 3	1,859	6	1,853	.416
Feb. 19	1,869	8	1,861	.418
Aug. 6	1,881	6	1,875	.421
July 2	1,922	5	1,917	.431
Sept. 17	1,937	6	1,931	.434
Feb. 26	1,940	17	1,923	.432
Jan. 1	1,948	35	1,913	.430
29	1,989	28	1,961	.440
Sept. 24	2,008	4	2,004	.450
Nov. 20	2,056	9	2,047	.460
June 25	2,097	5	2,092	.470
Jan. 22	2,217	19	2,198	.494
Mar. 12	2,227	9	2,218	.498
Feb. 12	2,411	18	2,393	.538
5	2,572	28	2,544	.571
June 4	2,643	6	2,637	.592
11	2,655	10	2,645	.594
Mar. 5	2,707	14	2,693	.605
June 18	2,924	9	2,915	.655
Nov. 13	2,947	39	2,908	.653
Jan. 15	2,988	36	2,952	.663
May 28	3,250	9	3,241	.728
21	4,124	7	4,117	.925
Jan. 8	4,159	62	4,097	.920
Mar. 26	4,548	29	4,519	1.015
19	6,049	73	5,976	1.342
May 14	6,162	9	6,153	1.382
7	11,904	9	11,895	2.672
Apr. 9	11,947	61	11,886	2.670
30	12,363	23	12,340	2.772
23	14,164	18	14,146	3.177
2	14,205	22	14,183	3.186
16	15,657	43	15,614	3.507
The year	3,514	16	3,498	.786

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1911-12.				
July 14	1,604	5	1,599	0.359
Oct. 1	1,731	4	1,727	.388
July 21	1,740	5	1,735	.390
7	1,748	5	1,743	.392
Aug. 4	1,853	7	1,846	.415
Sept. 1	1,886	5	1,881	.423
8	1,954	5	1,949	.438
15	2,020	5	2,015	.453
July 28	2,097	7	2,090	.469
Aug. 25	2,110	6	2,104	.473
11	2,126	7	2,119	.476
Sept. 22	2,277	5	2,272	.510
June 30	2,490	5	2,485	.558
Feb. 18	2,558	7	2,551	.573
Sept. 29	2,637	5	2,632	.591
Oct. 15	2,701	4	2,697	.606
Feb. 11	2,758	27	2,731	.613
Oct. 8	2,835	4	2,831	.636
Aug. 18	2,887	6	2,881	.647
Feb. 4	2,964	16	2,948	.662
Jan. 14	3,135	16	3,119	.701
21	3,212	23	3,189	.716
June 23	3,306	5	3,301	.741
Mar. 10	3,315	47	3,268	.734
Feb. 25	3,607	89	3,518	.790
Nov. 5	3,683	6	3,677	.826
Jan. 28	3,844	26	3,818	.858
Dec. 10	3,966	15	3,951	.887
Nov. 12	4,132	5	4,127	.927
Jan. 7	4,164	25	4,139	.930
Mar. 3	4,324	124	4,200	.943
Dec. 17	4,643	20	4,623	1.038
June 16	4,652	9	4,643	1.043
Nov. 19	4,857	20	4,837	1.086
Oct. 22	4,869	6	4,863	1.092
Dec. 3	5,541	31	5,510	1.238
Nov. 26	5,770	32	5,738	1.289
Dec. 24	5,871	48	5,823	1.308
Oct. 29	6,432	9	6,423	1.443
Dec. 31	8,378	57	8,321	1.869
May 5	9,578	117	9,461	2.125
12	9,767	177	9,590	2.154
June 9	10,232	56	10,176	2.286
2	10,941	239	10,702	2.404
May 19	11,695	278	11,417	2.564
26	12,079	308	11,771	2.644
Mar. 17	12,977	439	12,538	2.816
31	15,610	282	15,358	3.450
Apr. 28	15,883	133	15,750	3.538
21	19,754	196	19,558	4.393
7	22,086	350	21,736	4.982
14	22,234	176	22,058	4.955
Mar. 24	22,461	314	22,147	4.975
The year	6,386	73	6,313	1.418

Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles.	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1912-13.				
Aug. 31	1,130	10	1,120	0.252
Sept. 21	1,228	11	1,217	.273
14	1,442	5	1,437	.323
Aug. 3	1,462	10	1,452	.326
17	1,465	8	1,457	.327
24	1,471	17	1,454	.327
July 27	1,514	8	1,506	.338
Aug. 10	1,559	8	1,551	.348
Sept. 7	1,629	10	1,619	.364
July 6	1,704	6	1,698	.381
Oct. 13	1,885	5	1,880	.422
July 20	1,894	7	1,887	.424
13	2,029	8	2,021	.454
Oct. 20	2,100	9	2,091	.470
6	2,101	5	2,096	.471
Sept. 28	2,462	16	2,446	.549
June 29	2,488	12	2,476	.556
22	2,659	18	2,641	.593
15	3,436	34	3,402	.764
Feb. 16	3,521	43	3,478	.781
23	3,640	68	3,572	.802
May 18	3,795	30	3,765	.846
Dec. 29	3,913	31	3,882	.872
1	4,483	30	4,453	1.000
22	4,546	21	4,525	1.016
Nov. 24	4,804	12	4,792	1.076
Dec. 15	4,805	15	4,790	1.076
Nov. 3	5,032	5	5,027	1.129
Feb. 9	5,077	71	5,006	1.124
May 25	5,120	90	5,030	1.130
Mar. 9	5,211	129	5,082	1.142
Oct. 27	5,212	5	5,207	1.170
May 11	5,305	52	5,253	1.180
Mar. 2	5,597	130	5,467	1.228
Dec. 8	5,702	37	5,665	1.272
Feb. 2	6,199	86	6,113	1.373
Nov. 10	6,456	9	6,447	1.448
June 8	6,668	47	6,621	1.487
Jan. 19	6,847	114	6,733	1.512
Nov. 17	6,884	16	6,868	1.543
May 4	7,885	114	7,771	1.746
Jan. 12	7,973	110	7,863	1.766
Apr. 27	8,032	153	7,879	1.770
Jan. 26	8,876	104	8,772	1.970
5	8,937	104	8,833	1.984
Mar. 16	10,152	150	10,002	2.247
Apr. 13	10,772	216	10,556	2.371
June 1	11,922	128	11,794	2.649
Apr. 20	12,499	344	12,155	2.730
6	16,370	224	16,146	3.627
Mar. 23	21,190	149	21,041	4.726
30	26,447	315	26,132	5.870
The year	5,683	65	5,618	1.262

Weekly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Week ending Sunday.	Mean discharge in second-feet.				Week ending Sunday.	Mean discharge in second-feet.			
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.		Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage basins.	Per square mile of net drainage area.
1913–14.					1914–15.				
Sept. 27	1,621	8	1,613	0.362	Oct. 18	1,145	7	1,138	0.256
Aug. 16	1,753	10	1,743	.392	3	1,348	8	1,340	.301
Sept. 20	1,761	8	1,753	.394	Nov. 15	1,372	29	1,343	.302
Aug. 2	1,842	12	1,830	.411	Oct. 11	1,375	8	1,367	.307
9	1,904	14	1,890	.425	Nov. 8	1,407	26	1,381	.310
Sept. 13	2,017	8	2,009	.451	1	1,408	10	1,398	.314
Aug. 23	2,035	29	2,006	.451	Dec. 27	1,452	30	1,422	.319
Oct. 5	2,120	18	2,102	.472	Oct. 25	1,469	8	1,461	.328
July 26	2,155	8	2,147	.482	Jan. 3	1,599	28	1,571	.353
Oct. 19	2,210	19	2,191	.492	Nov. 29	1,778	27	1,751	.393
Aug. 30	2,263	12	2,251	.506	June 20	1,890	10	1,880	.422
June 28	2,463	8	2,455	.551	Nov. 22	1,918	31	1,887	.424
Oct. 12	2,473	12	2,461	.553	June 13	1,929	10	1,919	.431
July 5	2,484	23	2,461	.553	Dec. 20	2,091	39	2,052	.461
19	2,689	20	2,669	.600	6	2,203	29	2,174	.488
June 22	2,691	8	2,683	.603	13	2,268	31	2,237	.502
Jan. 25	2,756	95	2,661	.598	June 27	2,304	9	2,295	.515
18	2,821	87	2,734	.614	6	2,506	11	2,495	.560
Sept. 6	2,871	8	2,863	.643	Sept. 19	2,552	12	2,540	.571
July 12	2,984	20	2,964	.666	12	2,726	19	2,707	.608
Nov. 9	3,487	32	3,455	.776	26	2,805	19	2,786	.626
Mar. 1	3,517	210	3,307	.743	Jan. 10	2,872	66	2,806	.630
Jan. 11	3,523	100	3,423	.769	May 30	2,983	16	2,967	.666
Nov. 30	3,524	57	3,467	.779	Feb. 7	3,362	150	3,212	.721
Feb. 22	3,607	112	3,495	.785	May 23	3,653	21	3,632	.816
June 14	3,694	6	3,688	.828	Jan. 17	3,897	145	3,752	.843
Jan. 4	3,752	99	3,653	.821	Sept. 5	4,013	24	3,989	.896
Nov. 23	4,093	46	4,047	.909	July 4	4,094	105	3,989	.896
Dec. 7	4,110	67	4,043	.908	Feb. 14	4,250	196	4,054	.911
28	4,159	117	4,042	.908	July 25	4,535	51	4,484	1.007
21	4,265	54	4,211	.946	Mar. 21	4,677	33	4,644	1.043
Feb. 15	4,354	107	4,247	.954	Apr. 4	4,784	27	4,757	1.069
June 7	4,418	23	4,395	.987	May 16	5,051	20	5,031	1.130
Oct. 26	4,473	38	4,435	.996	Jan. 31	5,109	153	4,956	1.113
Feb. 1	4,802	222	4,580	1.029	Mar. 28	5,170	30	5,140	1.155
May 31	5,629	49	5,580	1.253	Aug. 1	5,494	45	5,449	1.224
Feb. 8	6,011	219	5,792	1.301	Mar. 14	6,038	70	5,968	1.341
Nov. 2	6,193	63	6,130	1.377	Apr. 11	6,549	43	6,506	1.461
Dec. 14	6,420	72	6,348	1.426	25	6,644	22	6,622	1.487
Nov. 16	6,486	47	6,439	1.446	Feb. 21	6,800	264	6,536	1.468
Mar. 22	8,485	151	8,334	1.872	Aug. 22	6,820	59	6,761	1.519
May 24	9,382	88	9,294	2.088	May 2	7,301	33	7,268	1.633
Mar. 15	12,074	240	11,834	2.658	Aug. 29	7,337	48	7,289	1.637
29	12,177	123	12,054	2.708	May 9	7,745	35	7,710	1.732
May 1	14,968	280	14,688	3.299	July 18	9,191	76	9,115	2.047
10	17,879	262	17,617	3.957	Jan. 24	9,701	341	9,360	2.102
Apr. 19	18,201	253	17,948	4.031	Mar. 7	11,318	147	11,171	2.509
12	20,694	360	20,334	4.567	Aug. 15	11,704	131	11,573	2.600
May 3	24,029	333	23,696	5.323	8	13,185	245	12,940	2.907
Apr. 26	24,042	194	23,848	5.357	Apr. 18	13,896	14	13,882	3.118
Mar. 8	24,544	544	24,000	5.391	July 11	14,638	167	14,471	3.250
Apr. 5	26,003	335	25,668	5.765	Feb. 28	17,485	258	17,227	3.869
The year	6,710	102	6,608	1.484	The year	4,997	66	4,931	1.108

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles.)[a]	Wasting into Merrimack River from diverted drainage basins.[b]	From net drainage area.[c]	Per square mile of net drainage area.[c]	Depth in inches on drainage area.[c]	Per cent of rainfall.	
1879–80.							
October	2,445	4	2,441	0.534	0.62	50.5	1.22
November	4,338	3	4,335	949	1.06	27.9	3.80
December	7,038	3	7,035	1.540	1.78	45.8	3.88
January	7,475	84	7,391	1.618	1.87	47.2	3.95
February	12,449	179	12,270	2.687	2.90	111.4	2.60
March	10,620	151	10,469	2.292	2.64	134.1	1.97
April	10,878	111	10,767	2.358	2.63	91.6	2.87
May	5,557	35	5,522	1.209	1.39	61.7	2.26
June	3,183	3	3,180	.696	.78	35.5	2.19
July	2,952	3	2,949	.646	.74	15.6	4.77
August	2,535	4	2,531	.554	.64	25.6	2.50
September	2,241	3	2,238	.490	.55	21.4	2.56
The year	5,976	49	5,927	1.298	17.60	50.9	34.57
1880–81.							
October	1,773	3	1,770	.388	.45	10.8	4.13
November	4,244	3	4,241	.929	1.04	36.9	2.81
December	2,649	3	2,646	.580	.67	28.2	2.37
January	2,304	2	2,302	.504	.58	14.7	3.96
February	4,792	100	4,692	1.027	1.07	30.4	3.52
March	17,106	465	16,641	3.641	4.20	97.6	4.30
April	16,197	152	16,045	3.511	3.92	279.8	1.40
May	14,249	79	14,170	3.101	3.57	84.7	4.22
June	5,131	130	5,001	1.094	1.22	37.9	3.22
July	3,447	13	3,434	.751	.87	18.6	4.66
August	2,794	2	2,792	.611	.70	36.7	1.92
September	2,513	2	2,511	.549	.61	20.2	3.03
The year	6,433	80	6,353	1.390	18.90	47.8	39.54
1881–82.							
October	2,494	2	2,492	.545	.63	18.3	3.43
November	5,301	12	5,289	1.157	1.29	36.7	3.52
December	8,407	33	8,374	1.832	2.11	38.3	5.51
January	7,432	104	7,328	1.604	1.85	50.8	3.64
February	9,456	245	9,211	2.016	2.10	48.9	4.29
March	16,248	330	15,918	3.483	4.02	130.9	3.07
April	10,405	42	10,363	2.268	2.53	190.2	1.33
May	10,728	124	10,604	2.320	2.67	56.3	4.75
June	9,013	42	8,971	1.963	2.19	61.2	3.58
July	3,142	2	3,140	.687	.79	31.9	2.48
August	2,151	2	2,149	.470	.54	55.9	.97
September	3,716	3	3,713	.812	.91	11.4	7.96
The year	7,374	78	7,296	1.596	21.63	48.6	44.53
1882–83.							
October	3,099	2	3,097	.678	.78	49.4	1.58
November	2,310	3	2,307	.505	.56	55.8	1.01
December	2,161	3	2,158	.472	.54	20.5	2.66
January	2,024	2	2,022	.442	.51	20.2	2.53
February	2,944	47	2,897	.634	.66	17.5	3.77
March	4,090	156	3,934	.861	.99	56.7	1.75
April	15,535	80	15,455	3.382	3.77	167.7	2.25
May	8,540	68	8,472	1.854	2.14	54.9	3.89
June	5,040	11	5,029	1.100	1.23	36.1	3.40
July	3,127	2	3,125	.684	.79	16.1	4.89
August	1,933	2	1,931	.423	.49	39.6	1.23
September	1,219	2	1,217	.266	.30	12.3	2.42
The year	4,335	32	4,303	.942	12.76	40.7	31.38

[a] In July, 1909, Dug Pond in La e Cochituate drainage basin was diverted to Charles River, thus artificially reducing the drainage area 1 square mile. Prior to July, 1909, the total drainage area was 4,664 square miles.

[b] Prior to Jan. 1, 1881, the diverted drainage area from which discharge wasted into the Merrimac was 97 square miles; Jan. 1, 1881, to Mar. 6, 1898, 94 square miles; Mar. 7, 1898, to June 30, 1909, 212 square miles; July 1, 1909, to Sept. 30, 1915, 211 square miles.

[c] Prior to Jan. 1, 1881, the net drainage area was 4,567 square miles; Jan. 1, 1881, to Mar. 6, 1898, 4,570 square miles; Mar. 7, 1898, to Sept. 30, 1915, 4,452 square miles.

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1883–84.							
October	1,975	2	1,973	0.432	0.50	10.7	4.66
November	2,868	2	2,866	.627	.70	32.2	2.17
December	2,355	2	2,353	.515	.59	20.5	2.90
January	4,662	6	4,656	1.019	1.17	28.6	4.11
February	9,609	224	9,385	2.054	2.22	41.1	5.39
March	15,742	481	15,261	3.339	3.85	82.6	4.66
April	26,199	352	25,847	5.656	6.31	178.3	3.54
May	11,922	109	11,813	2.585	2.98	85.1	3.50
June	4,091	12	4,079	.893	1.00	47.4	2.10
July	2,293	10	2,283	.500	.58	16.7	3.44
August	2,118	11	2,107	.461	.53	12.6	4.22
September	1,949	2	1,947	.426	.47	51.7	.92
The year	7,149	101	7,048	1.542	20.90	50.2	41.61
1884–85.							
October	1,832	2	1,830	.400	.46	18.6	2.48
November	2,391	5	2,386	.522	.58	18.1	3.22
December	4,716	46	4,670	1.022	1.18	25.3	4.66
January	5,317	122	5,195	1.137	1.31	26.5	4.95
February	4,428	141	4,287	.938	.98	26.7	3.66
March	3,543	169	3,374	.738	.85	64.5	1.32
April	18,323	194	18,194	3.967	4.43	153.1	2.89
May	8,548	150	8,398	1.838	2.12	75.7	2.80
June	4,222	32	4,190	.917	1.02	30.1	3.40
July	2,850	4	2,846	.623	.72	21.6	3.33
August	5,445	2	5,443	1.191	1.37	18.9	7.26
September	2,891	2	2,889	.632	.70	45.2	1.56
The year	5,376	72	5,304	1.161	15.72	37.9	41.53
1885–86.							
October	3,425	2	3,423	.749	.86	21.2	4.07
November	9,186	100	9,086	1.988	2.22	39.9	5.56
December	6,982	147	6,835	1.496	1.72	52.4	3.29
January	13,200	133	13,067	2.859	3.30	58.2	5.66
February	17,991	634	17,357	3.798	3.95	73.5	5.38
March	12,033	239	11,794	2.581	2.98	94.2	3.16
April	22,774	240	22,534	4.931	5.50	269.7	2.04
May	6,821	67	6,754	1.478	1.70	54.4	3.13
June	3,267	5	3,262	.714	.80	39.0	2.04
July	2,275	3	2,272	.497	.57	16.7	3.43
August	1,989	2	1,987	.435	.50	14.6	3.44
September	1,986	2	1,984	.434	.48	12.6	3.83
The year	8,494	131	8,363	1.830	24.58	54.6	45.03
1886–87.							
October	2,154	2	2,152	.471	.54	17.8	3.05
November	7,032	2	7,030	1.538	1.72	34.8	4.93
December	5,969	45	5,924	1.296	1.49	34.8	4.29
January	7,822	311	7,511	1.644	1.89	38.5	4.92
February	13,217	314	12,903	2.823	2.94	58.0	5.07
March	8,424	341	8,083	1.769	2.04	49.2	4.15
April	22,189	310	21,879	4.788	5.34	146.7	3.64
May	13,814	99	13,715	3.001	3.46	172.1	2.01
June	8,193	29	8,164	1.786	1.99	53.4	3.73
July	6,674	9	6,665	1.458	1.68	29.4	5.71
August	8,566	38	8,528	1.866	2.15	34.3	6.26
September	4,197	2	4,195	.918	1.03	67.4	1.52
The year	9,021	125	8,896	1.947	26.27	53.3	49.28

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1887–88.							
October	3,122	2	3,120	0.682	0.79	35.1	2.24
November	4,418	2	4,416	.966	1.08	31.7	3.40
December	6,138	30	6,108	1.337	1.54	37.0	4.16
January	6,417	73	6,344	1.388	1.60	37.1	4.31
February	8,480	171	8,309	1.818	1.96	47.9	4.09
March	10,273	367	9,906	2.168	2.50	44.5	5.62
April	24,905	330	24,575	5.377	6.00	195.5	3.07
May	20,921	176	20,745	4.539	5.23	128.6	4.07
June	5,639	26	5,613	1.228	1.37	52.3	2.62
July	2,512	7	2,505	.548	.63	34.5	1.83
August	2,645	7	2,638	.577	.66	14.1	4.71
September	7,135	97	7,038	1.540	1.72	20.3	8.47
The year	8,550	107	8,443	1.848	25.08	51.6	48.59
1888–89.							
October	12,368	229	12,139	2.656	3.06	52.3	5.85
November	13,528	329	13,199	2.888	3.22	54.7	5.89
December	14,920	383	14,537	3.181	3.67	89.0	4.12
January	12,295	328	11,967	2.619	3.02	61.0	4.95
February	6,271	124	6,147	1.345	1.40	75.3	1.86
March	11.037	138	10,899	2.385	2.75	121.1	2.27
April	11,142	137	11,005	2.408	2.69	91.7	2.93
May	6,623	56	6,567	1.437	1.66	54.0	3.07
June	5,390	69	5,321	1.167	1.30	40.8	3.18
July	3,609	35	3,574	.782	.90	13.8	6.51
August	5,182	214	4,968	1.087	1.25	44.4	2.82
September	3,498	72	3,426	.750	.84	20.3	4.12
The year	8,822	176	8,646	1.892	25.76	54.2	47.57
1889–90.							
October	5,711	137	5,574	1.220	1.41	32.6	4.31
November	8,976	184	8,792	1.924	2.15	37.0	5.80
December	13,125	276	12,849	2.812	3.24	92.3	3.51
January	6,955	135	6,820	1.492	1.72	58.1	2.96
February	7,721	155	7,566	1.656	1.72	46.0	3.75
March	15,667	469	15,198	3.326	3.83	64.3	5.96
April	17,244	208	17,036	3.728	4.16	200.9	2.07
May	14,285	137	14,148	3.096	3.57	65.4	5.46
June	7,881	38	7,843	1.716	1.91	67.2	2.85
July	3,161	3	3,158	.691	.80	21.4	3.72
August	3,406	2	3,404	.745	.86	16.3	5.27
September	8,397	20	8,377	1.833	2.05	38.3	5.34
The year	9,377	147	9,230	2.020	27.42	53.8	51.00
1890–91.							
October	12,314	211	12,103	2.648	3.05	39.9	7.66
November	8,871	106	8,765	1.918	2.14	134.6	1.59
December	6,573	93	6,480	1.418	1.63	38.1	4.29
January	13,298	395	12,903	2.823	3.25	50.5	6.44
February	13.499	470	13,029	2.851	2.97	70.5	4.21
March	23,616	577	23,039	5.041	5.81	113.3	5.13
April	21,519	292	21,227	4.645	5.18	183.1	2.83
May	7,347	30	7,317	1.601	1.85	83.5	2.21
June	4,542	17	4,525	.990	1.11	32.8	3.37
July	2,895	3	2,892	.633	.73	18.2	4.00
August	2,460	2	2,458	.538	.62	19.1	3.25
September	2,544	3	2,541	.556	.62	33.4	1.86
The year	9,956	183	9,773	2.139	28.96	61.8	46.84

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1891-92.							
October	2,137	3	2,134	0.467	0.54	17.4	3.09
November	2,469	3	2,466	.540	.60	25.4	2.37
December	4,113	3	4,110	.899	1.04	26.3	3.94
January	8,524	132	8,392	1.836	2.12	46.2	4.58
February	4,302	76	4,226	.925	1.00	44.1	2.27
March	7,330	192	7,138	1.562	1.80	67.2	2.68
April	8,150	43	8,107	1.774	1.98	271.1	.73
May	10,233	109	10,124	2.215	2.55	45.2	5.65
June	5,819	6	5,813	1.272	1.42	32.9	4.32
July	4,757	2	4,755	1.040	1.20	44.8	2.68
August	4,807	3	4,804	1.051	1.21	18.9	6.40
September	3,944	2	3,942	.863	.96	43.2	2.23
The year	5,549	48	5,501	1.204	16.42	40.1	40.94
1892-93.							
October	2,135	2	2,133	.467	.54	40.8	1.32
November	6,494	6	6,488	1.420	1.58	31.7	5.00
December	3,931	4	3,927	.859	.99	101.1	.98
January	2,949	3	2,946	.645	.74	31.1	2.39
February	4,995	56	4,939	1.081	1.12	18.5	6.08
March	10,723	300	10,423	2.281	2.63	93.6	2.81
April	15,563	213	15,350	3.359	3.75	139.8	2.68
May	19,504	303	19,201	4.202	4.84	87.4	5.54
June	4,404	5	4,399	.963	1.07	40.1	2.68
July	2,389	2	2,387	.522	.60	27.8	2.17
August	2,582	3	2,579	.564	.65	12.7	5.14
September	2,782	3	2,779	.608	.68	33.3	2.04
The year	6,538	75	6,463	1.414	19.19	49.4	38.83
1893-94.							
October	3,614	2	3,612	.790	.91	20.7	4.40
November	3,366	2	3,364	.736	.82	42.3	1.94
December	5,330	2	5,328	1.166	1.34	31.4	4.28
January	3,022	2	3,020	.661	.76	28.2	2.70
February	4,274	8	4,266	.933	.97	33.5	2.90
March	14,375	140	14,235	3.115	3.59	280.6	1.28
April	11,085	111	10,974	2.401	2.68	113.5	2.36
May	6,992	21	6,971	1.525	1.76	42.6	4.13
June	6,033	15	6,018	1.317	1.47	87.5	1.68
July	2,278	2	2,276	.498	.57	20.1	2.86
August	1,695	2	1,693	.370	.43	22.4	1.91
September	1,831	2	1,829	.400	.45	13.6	3.28
The year	5,324	26	5,298	1.159	15.75	46.7	33.72
1894-95.							
October	2,254	2	2,252	.493	.57	15.1	3.76
November	3,549	23	3,526	.772	.86	32.6	2.64
December	3,033	11	3,022	.661	.76	26.6	2.87
January	2,887	27	2,860	.626	.72	24.0	3.01
February	2,319	3	2,316	.507	.53	58.6	.90
March	5,857	108	5,749	1.258	1.45	65.0	2.23
April	19,840	237	19,603	4.289	4.79	96.9	4.94
May	6,233	18	6,215	1.360	1.57	71.6	2.19
June	3,038	3	3,035	.664	.74	25.9	2.86
July	2,583	2	2,581	.565	.65	16.4	3.97
August	2,180	2	2,178	.477	.55	16.0	3.43
September	1,673	2	1,671	.366	.41	15.2	2.68
The year	4,621	36	4,585	1.005	13.60	38.3	35.48

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1895–96.							
October	4,010	66	3,944	0.863	0.99	017.9	5.56
November	9,558	205	9,353	2.047	2.28	36.8	6.21
December	9,404	150	9,254	2.025	2.34	67.1	3.48
January	6,546	61	6,485	1.419	1.64	104.2	1.57
February	9,109	239	8,870	1.941	2.09	39.0	5.37
March	21,054	445	20,609	4.510	5.20	79.6	6.53
April	18,234	105	18,129	3.967	4.43	351.3	1.26
May	4,438	2	4,436	.971	1.12	47.4	2.36
June	3,518	2	3,516	.769	.86	37.6	2.28
July	2,042	2	2,040	.446	.51	16.4	3.13
August	2,019	2	2,017	.441	.51	16.5	3.08
September	3,122	2	3,120	.683	.76	11.7	6.51
The year	7,754	107	7,647	1.673	22.73	48.0	47.34
1896–97.							
October	5,186	2	5,184	1.134	1.31	34.5	3.80
November	6,662	19	6,643	1.454	1.62	51.0	3.18
December	4,359	7	4,352	.952	1.10	72.2	1.52
January	3,409	4	3,405	.745	.86	24.1	3.56
February	4,571	2	4,569	1.000	1.04	39.4	2.64
March	10,571	86	10,485	2.294	2.64	72.1	3.67
April	17,612	66	17,546	3.839	4.28	177.7	2.41
May	10,117	23	10,094	2.209	2.55	53.8	4.73
June	12,708	54	12,654	2.769	3.09	50.7	6.09
July	10,799	17	10,782	2.359	2.72	39.1	6.95
August	5,072	21	5,051	1.105	1.27	37.5	3.40
September	2,759	4	2,755	.603	.67	32.7	2.06
The year	7,819	25	7,794	1.705	23.15	52.6	44.01
1897–98.							
October	2,207	4	2,203	.482	.56	60.4	.92
November	5,827	6	5,821	1.274	1.42	22.5	6.32
December	10,376	38	10,338	2.262	2.61	53.0	4.92
January	7,394	24	7,370	1.613	1.86	35.2	5.28
February	7,797	312	7,485	1.638	1.71	39.8	4.29
March	18,612	615	17,997	4.042	4.66	315.0	1.48
April	15,228	466	14,762	3.316	3.70	84.3	4.39
May	10,996	314	10,682	2.399	2.77	81.9	3.38
June	6,464	158	6,306	1.416	1.58	49.1	3.22
July	2,660	57	2,603	.585	.67	23.9	2.82
August	3,799	346	3,453	.776	.89	13.8	6.48
September	2,910	81	2,829	.636	.71	21.4	3.31
The year	7,856	202	7,654	1.697	23.14	49.4	46.81
1898–99.							
October	6,429	323	6,106	1.372	1.58	24.9	6.35
November	9,887	565	9,322	2.094	2.34	41.4	5.65
December	8,779	449	8,330	1.871	2.16	74.9	2.88
January	7,857	481	7,376	1.657	1.91	59.1	3.23
February	4,882	289	4,593	1.032	1.07	30.6	3.50
March	11,948	913	11,035	2.479	2.86	43.9	6.51
April	26,438	809	25,629	5.757	6.42	406.6	1.58
May	9,528	87	9,441	2.121	2.44	178.5	1.37
June	2,980	12	2,968	.667	.74	24.2	3.07
July	2,481	8	2,473	.556	.64	15.7	4.09
August	2,086	7	2,079	.467	.54	24.5	2.20
September	1,994	6	1,988	.447	.50	11.7	4.27
The year	7,941	329	7,612	1.710	23.20	51.9	44.70

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1899–1900.							
October	1,789	6	1,783	0.401	0.46	023.2	1.99
November	2,792	12	2,780	.625	.70	31.4	2.22
December	2,797	27	2,770	.622	.72	41.2	1.74
January	3,360	28	3,332	.748	.86	18.4	4.69
February	16,481	812	15,669	3.520	3.67	45.3	8.10
March	16,245	926	15,319	3.441	3.97	69.4	5.72
April	18,500	305	18,195	4.087	4.56	253.4	1.80
May	10,034	307	9,727	2.185	2.52	73.9	3.41
June	3,957	50	3,907	.878	.98	38.6	2.54
July	1,818	7	1,811	.407	.47	18.8	2.49
August	1,876	7	1,869	.420	.48	15.5	3.13
September	1,513	7	1,506	.338	.38	11.2	3.37
The year	6,764	208	6,556	1.473	19.77	48.0	41.20
1900–1901.							
October	2,517	8	2,509	.564	.65	18.6	3.49
November	5,849	45	5,804	1.304	1.45	24.6	5.92
December	6,783	169	6,614	1.486	1.71	66.9	2.56
January	3,381	31	3,350	.752	.87	49.0	1.77
February	2,452	20	2,432	.546	.57	68.6	.83
March	9,510	324	9,186	2.063	2.38	47.3	5.03
April	26,025	1,238	24,787	5.568	6.21	84.3	7.37
May	15,612	732	14,880	3.342	3.85	59.3	6.50
June	7,521	147	7,374	1.656	1.85	116.3	1.59
July	2,891	23	2,868	.644	.74	14.7	5.04
August	4,449	46	4,403	.989	1.14	26.5	4.31
September	2,657	40	2,617	.588	.66	22.8	2.88
The year	7,471	235	7,236	1.625	22.08	46.7	47.29
1901–2.							
October	4,128	65	4,063	.913	1.05	32.8	3.21
November	3,050	139	2,911	.654	.73	35.9	2.03
December	9,756	611	9,145	2.054	2.37	31.4	7.54
January	10,454	359	10,095	2.268	2.61	110.3	2.37
February	5,620	296	5,324	1.196	1.25	34.5	3.61
March	27,884	1,124	26,760	6.011	6.93	129.8	5.34
April	17,392	472	16,920	3.801	4.24	94.7	4.48
May	10,168	127	10,041	2.255	2.60	98.1	2.65
June	5,292	9	5,283	1.187	1.32	40.9	3.24
July	4,327	7	4,320	.970	1.12	28.0	4.00
August	3,763	6	3,757	.844	.97	21.8	4.47
September	3,452	6	3,446	.774	.86	18.6	4.65
The year	8,774	268	8,506	1.911	26.05	54.7	47.59
1902–3.							
October	7,162	40	7,122	1.600	1.84	36.1	5.11
November	5,748	29	5,719	1.285	1.43	140.5	1.02
December	8,119	304	7,815	1.755	2.02	35.8	5.66
January	7,699	202	7,497	1.684	1.94	58.0	3.35
February	9,309	497	8,812	1.979	2.06	54.3	3.80
March	27,675	826	26,849	6.031	6.95	119.5	5.82
April	15,587	562	15,025	3.375	3.77	143.2	2.63
May	4,365	6	4,359	.979	1.13	137.7	.82
June	10,295	394	9,901	2.224	2.48	29.9	8.29
July	4,648	52	4,596	1.032	1.19	33.5	3.55
August	3,338	71	3,267	.734	.85	24.5	3.46
September	2,371	13	2,358	.530	.59	31.6	1.87
The year	8,860	250	8,610	1.934	26.25	57.88	45.38

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1903–4.							
October	3,709	30	3,679	0.826	0.95	24.9	3.82
November	2,998	39	2,959	.665	.74	44.1	1.68
December	3,720	47	3,673	.825	.95	32.1	2.96
January	2,642	41	2,601	.584	.67	18.4	3.67
February	2,944	76	2,868	.644	.69	33.3	2.09
March	12,318	214	12,104	2.719	3.13	117.0	2.68
April	20,704	695	20,009	4.494	5.02	68.0	7.38
May	17,426	318	17,108	3.843	4.43	127.3	3.48
June	4,667	142	4,525	1.016	1.13	36.9	3.07
July	2,797	19	2,778	.624	.72	30.6	2.35
August	2,575	25	2,550	.573	.66	17.5	3.77
September	2,913	5	2,908	.653	.73	14.1	5.15
The year	6,618	138	6,480	1.456	19.82	47.1	42.10
1904–5.							
October	3,636	5	3,631	.816	.94	55.0	1.71
November	2,697	8	2,689	.604	.67	49.9	1.35
December	1,819	5	1,814	.407	.47	22.3	2.11
January	3,871	66	3,805	.855	.99	21.1	4.67
February	2,272	32	2,240	.503	.52	34.0	1.54
March	10,563	104	10,459	2.349	2.71	87.4	3.10
April	16,185	91	16,094	3.615	4.03	183.4	2.20
May	5,216	13	5,203	1.169	1.35	92.3	1.46
June	4,164	21	4,143	.931	1.04	21.3	4.87
July	2,674	5	2,669	.600	.69	20.1	3.44
August	2,702	5	2,697	.606	.70	18.1	3.85
September	7,631	37	7,594	1.706	1.90	27.8	6.84
The year	5,286	33	5,253	1.180	16.01	43.1	37.14
1905–6.							
October	3,261	23	3,238	.727	.84	59.1	1.42
November	3,388	5	3,383	.760	.85	37.4	2.27
December	5,687	16	5,671	1.274	1.47	38.3	3.84
January	7,664	73	7,591	1.705	1.97	75.9	2.59
February	5,108	65	5,043	1.133	1.18	49.6	2.38
March	7,684	217	7,467	1.677	1.93	42.8	4.52
April	16,159	174	15,985	3.591	4.01	158.4	2.53
May	10,140	40	10,100	2.269	2.62	44.6	5.87
June	10,114	44	10,070	2.262	2.52	50.5	5.00
July	4,951	27	4,924	1.106	1.27	27.8	4.59
August	3,314	17	3,297	.741	.85	30.9	2.76
September	1,885	8	1,877	.422	.47	27.8	1.69
The year	6,613	59	6,554	1.472	19.98	50.6	39.46
1906–7.							
October	2,451	8	2,443	.549	.63	18.9	3.35
November	3,167	21	3,146	.707	.79	31.5	2.50
December	2,558	36	2,522	.566	.65	17.2	3.80
January	6,400	117	6,283	1.411	1.63	67.0	2.43
February	3,054	85	2,969	.667	.69	38.4	1.81
March	7,799	106	7,693	1.728	1.99	101.7	1.96
April	13,141	129	13,012	2.923	3.26	111.7	2.92
May	9,124	70	9,054	2.034	2.35	84.7	2.77
June	5,351	55	5,296	1.190	1.33	40.0	3.32
July	3,341	8	3,333	.749	.86	25.1	3.44
August	1,927	7	1,920	.431	.50	35.0	1.42
September	2,965	8	2,957	.664	.74	8.7	8.48
The year	5,106	54	5,052	1.135	15.42	40.4	38.20

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1907–8.							
October	6,388	8	6,380	1.433	1.65	36.2	4.57
November	13,066	94	12,972	2.914	3.25	64.5	5.04
December	9,812	120	9,692	2.177	2.51	66.9	3.75
January	8,824	159	8,665	1.946	2.244	77.9	2.88
February	7,487	152	7,335	1.648	1.777	41.7	4.26
March	11,400	275	11,125	2.499	2.881	109.1	2.64
April	11,967	159	11,808	2.652	2.959	140.9	2.10
May	11,575	135	11,440	2.570	2.963	61.7	4.80
June	4,193	45	4,148	.932	1.040	100.9	1.03
July	2,329	7	2,322	.522	.601	15.6	3.85
August	2,986	14	2,972	.668	.770	15.2	5.07
September	1,693	7	1,686	.379	.423	46.4	.91
The year	7,643	98	7,545	1.695	23.068	56.4	40.90
1908–9.							
October	1,474	7	1,467	.330	.380	17.0	2.24
November	1,590	15	1,575	.354	.395	37.6	1.05
December	1,886	16	1,870	.420	.484	16.6	2.91
January	3,025	11	3,014	.677	.781	20.2	3.87
February	7,118	161	6,957	1.563	1.627	31.8	5.12
March	7,718	173	7,545	1.695	1.954	55.5	3.52
April	15,315	159	15,156	3.404	3.798	88.5	4.29
May	8,790	103	8,687	1.951	2.250	91.1	2.47
June	4,247	26	4,221	.948	1.058	38.1	2.78
July	1,999	7	1,992	.447	.516	20.3	2.54
August	1,682	7	1,675	.376	.434	15.1	2.88
September	1,652	7	1,645	.369	.412	9.4	4.37
The year	4,708	58	4,650	1.044	14.089	37.0	38.04
1909–10.							
October	1,886	8	1,878	.422	.486	38.3	1.27
November	1,745	19	1,726	.388	.433	17.4	2.49
December	2,265	23	2,242	.504	.581	17.1	3.39
January	4,759	117	4,642	1.043	1.202	26.5	4.53
February	4,493	161	4,332	.973	1.013	22.7	4.47
March	16,311	236	16,075	3.611	4.163	358.9	1.16
April	10,986	101	10,885	2.445	2.728	93.1	2.93
May	6,751	32	6,719	1.509	1.740	86.1	2.02
June	4,876	81	4,795	1.077	1.202	30.9	3.89
July	1,786	13	1,773	.398	.459	23.5	1.95
August	2,042	5	2,037	.458	.528	17.1	3.09
September	1,771	5	1,766	.397	.443	14.7	3.02
The year	4,973	67	4,906	1.102	14.978	43.8	34.21
1910–11.							
October	1,341	6	1,335	.300	.346	23.4	1.48
November	2,053	18	2,035	.457	.510	15.4	3.31
December	1,511	21	1,490	.335	.386	16.6	2.33
January	2,814	36	2,778	.624	.719	29.7	2.42
February	2,164	17	2,147	.482	.502	19.5	2.58
March	5,584	30	5,554	1.248	1.438	40.9	3.52
April	13,591	34	13,557	3.05	3.397	182.7	1.86
May	6,064	9	6,055	1.360	1.568	127.5	1.23
June	2,462	7	2,455	.551	.615	23.5	2.62
July	1,190	6	1,184	.266	.307	8.2	3.73
August	1,467	6	1,461	.328	.378	8.2	4.64
September	1,942	5	1,937	.435	.485	15.0	3.24
The year	3,515	16	3,499	.786	10.651	32.3	32.96

Monthly discharge of Merrimack River at Lawrence, Mass., for the years ending Sept. 30, 1880–1915—Continued.

Month.	Mean discharge in second-feet.				Run-off.		Rainfall in inches.
	Measured at Lawrence (total drainage area, 4,663 square miles).	Wasting into Merrimack River from diverted drainage basins.	From net drainage area.	Per square mile of net drainage area.	Depth in inches on drainage area.	Per cent of rainfall.	
1911–12.							
October	4,095	6	4,089	0.918	1.059	25.8	4.11
November	4,687	19	4,668	1.049	1.170	32.1	3.65
December	5,752	34	5,718	1.284	1.481	47.6	3.11
January	3,594	22	3,572	.802	.925	34.3	2.70
February	3,196	51	3,145	.706	.762	34.3	2.22
March	12,601	255	12,346	2.773	3.197	60.1	5.32
April	19,454	208	19,246	4.323	4.823	135.5	3.56
May	10,461	236	10,225	2.297	2.648	52.4	5.05
June	5,832	26	5,806	1.304	1.455	220.5	.66
July	1,838	5	1,833	.412	.475	13.8	3.45
August	2,230	7	2,223	.499	.576	16.9	3.40
September	2,162	5	2,157	.485	.541	19.1	2.83
The year	6,325	73	6,252	1.404	19.112	47.7	40.06
1912–13.							
October	3,268	6	3,262	.733	.845	31.2	2.71
November	5,533	15	5,518	1.239	1.383	39.6	3.49
December	4,790	32	4,758	1.069	1.232	29.3	4.20
January	8,007	106	7,901	1.775	2.046	73.3	2.79
February	4,465	70	4,395	.987	1.028	40.3	2.55
March	15,204	190	15,014	3.372	3.888	73.2	5.31
April	11,309	223	11,086	2.490	2.778	86.8	3.20
May	6,496	76	6,420	1.442	1.663	43.2	3.85
June	4,032	28	4,004	.899	1.003	90.4	1.11
July	1,757	8	1,749	.393	.453	18.6	2.44
August	1,372	10	1,362	.306	.353	11.5	3.07
September	1,735	11	1,724	.387	.432	12.9	3.36
The year	5,664	65	5,599	1.258	17.104	45.0	38.08
1913–14.							
October	3,552	30	3,522	.791	.912	15.7	5.81
November	4,352	45	4,307	.967	1.079	46.5	2.32
December	4,735	79	4,656	1.046	1.206	42.0	2.87
January	3,381	115	3,266	.734	.846	28.4	2.98
February	4,424	157	4,267	.958	.998	35.6	2.80
March	14,722	275	14,447	3.245	3.741	84.4	4.43
April	22,356	300	22,056	4.954	5.527	105.3	5.25
May	12,996	175	12,821	2.880	3.320	143.7	2.31
June	3,292	11	3,281	.737	.822	39.1	2.10
July	2,505	17	2,488	.559	.644	18.7	3.45
August	1,916	16	1,930	.434	.500	12.1	4.12
September	1,991	8	1,983	.445	.496	127.2	.39
The year	6,688	102	6,586	1.479	20.091	51.7	38.83
1914–15.							
October	1,358	8	1,350	.303	.349	23.7	1.47
November	1,614	28	1,586	.356	.397	15.3	2.60
December	1,976	31	1,945	.437	.504	16.9	2.99
January	4,972	162	4,810	1.080	1.245	25.1	4.96
February	7,974	218	7,756	1.742	1.814	51.0	3.56
March	6,678	65	6,613	1.485	1.712	2,140.0	.08
April	7,987	26	7,961	1.788	1.995	89.5	2.23
May	5,039	25	5,014	1.126	1.298	81.6	1.59
June	2,189	10	2,179	.489	.546	22.7	2.41
July	8,158	98	8,060	1.810	2.087	21.6	9.62
August	9,303	113	9,190	2.064	2.379	38.9	6.12
September	2,936	18	2,918	.655	.731	55.4	1.32
The year	5,015	67	4,948	1.110	15.057	38.7	38.95

NOTE.—Estimates of discharge wasted from diverted drainage area based on data furnished by the Metropolitan Water and Sewerage Board of Boston.

Days of deficiency in discharge of Merrimack River at Lawrence, Mass., during the years ending Sept. 30, 1880–1915.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.											
		1879–80	1880–81	1881–82	1882–83	1883–84	1884–85	1885–86	1886–87	1887–88	1888–89	1889–90	1890–91
50	5.7	.....	.....	.....	5	1	.....	.....	.....	.....	.....	.....	.....
100	11.4	2	4	.....	5	2	.....	.....	1	.....	.....	.....	.....
200	22.7	2	4	.....	7	4	3	2	1	1	.....	.....	.....
400	45.5	4	6	1	9	9	6	6	2	3	1	.....	.....
600	68.2	6	7	4	16	15	9	10	3	8	1	1	1
800	90.9	6	9	9	23	20	10	13	3	11	1	5	5
1,000	114	8	15	11	27	21	11	14	3	13	1	7	8
1,500	170	16	24	13	42	27	14	19	5	15	5	7	8
2,000	227	19	43	19	72	43	40	27	9	26	9	12	11
2,500	284	46	88	63	137	124	93	79	30	32	14	31	42
3,000	341	123	154	90	198	165	125	111	37	80	40	41	64
3,500	398	151	198	106	234	187	161	132	55	121	55	54	85
4,000	455	173	214	119	257	203	203	143	76	155	69	63	105
4,500	511	191	225	139	274	228	233	156	108	189	88	81	111
5,000	568	206	235	160	287	237	248	165	144	204	107	95	133
5,500	625	224	245	176	293	241	271	177	158	217	118	113	148
6,000	682	238	249	188	297	247	282	194	174	230	132	129	156
6,500	738	251	256	207	306	253	288	209	184	239	142	142	171
7,000	795	259	263	213	313	258	297	220	192	245	154	157	182
7,500	852	274	265	228	320	265	304	235	207	249	163	166	198
8,000	909	285	270	241	323	268	311	242	216	254	170	173	210
8,500	966	298	275	254	330	272	317	248	227	256	181	194	216
9,000	1,020	305	278	262	334	274	319	259	238	261	191	207	220
10,000	1,140	318	289	279	336	279	323	269	251	266	222	226	234
12,000	1,360	329	304	302	342	302	330	289	283	280	290	258	255
16,000	1,820	344	318	335	351	321	338	313	317	298	336	315	297
20,000	2,270	358	345	352	355	330	353	325	328	309	351	335	312
25,000	2,840	363	358	360	360	345	365	346	347	345	361	364	336
30,000	3,410	366	365	363	363	355	.....	354	356	356	363	365	353
40,000	4,550	.....	.....	365	365	362	.....	363	364	366	365	.....	364
50,000	5,680	.....	.....	.....	.....	366	.....	365	365	.....	.....	.....	365
70,000	6,820	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
90,000	7,950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Days of deficiency in discharge of Merrimack River at Lawrence, Mass., during the years ending Sept. 30, 1880–1915—Continued.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.										
		1891–92	1892–93	1893–94	1894–95	1895–96	1896–97	1897–98	1898–99	1899–1900	1900–1901	1901–2
50	5.7	.....	.....	.....	.....	.....	.....	.....	.....	2	.....	.....
100	11.4	.....	.....	.....	2	.....	.....	.....	2	6	.....	.....
200	22.7	.....	.....	4	3	1	.....	1	2	11	.....	.....
400	45.5	2	6	10	8	5	.....	4	6	19	3	.....
600	68.2	8	8	12	13	7	.....	5	10	24	4	1
800	90.9	12	11	13	15	10	.....	5	12	26	8	2
1,000	114	12	14	14	19	10	.....	5	12	30	11	2
1,500	170	15	20	32	29	18	3	8	14	44	14	7
2,000	227	21	43	60	70	37	12	21	30	78	29	12
2,500	284	69	76	102	121	77	25	39	70	154	66	27
3,000	341	109	129	153	191	111	57	77	101	192	121	62
3,500	398	140	168	187	238	133	83	97	116	206	161	88
4,000	455	172	200	208	261	152	105	114	137	224	182	118
4,500	511	193	234	225	282	168	127	123	149	231	211	145
5,000	568	219	247	239	290	187	154	137	158	234	226	173
5,500	625	239	254	249	296	200	176	161	169	239	233	197
6,000	682	256	262	257	303	214	188	176	185	244	242	213
6,500	738	263	265	269	310	223	203	191	203	249	247	225
7,000	795	275	272	274	317	235	215	207	225	252	253	236
7,500	852	286	274	280	319	244	223	223	234	257	257	244
8,000	909	293	276	286	325	252	235	235	240	263	264	254
8,500	966	300	278	294	331	256	245	247	247	265	265	257
9,000	1,020	303	279	299	335	260	250	257	257	268	268	260
10,000	1,140	317	286	314	342	271	273	277	275	274	279	267
12,000	1,360	337	293	334	347	291	302	306	300	296	289	283
16,000	1,820	355	328	348	351	325	331	331	327	325	321	311
20,000	2,270	360	350	358	355	338	348	344	339	341	338	326
25,000	2,840	366	358	363	357	352	359	349	350	352	348	342
30,000	3,410	.....	360	365	359	362	361	358	353	357	356	351
40,000	4,550	.....	364	.....	362	363	363	365	365	362	362	360
50,000	5,680	.....	365	.....	363	364	365	.....	.....	364	363	362
70,000	6,820	.....	.....	.....	365	365	.....	.....	.....	365	365	365
90,000	7,950	.....	.....	.....	.....	366	.....	.....	.....	.....	.....	.....

Days of deficiency in discharge of Merrimack River at Lawrence, Mass., during the years ending Sept. 30, 1880–1915—Continued.

Discharge in second-feet.	Theoretical horsepower per foot of fall.	Days of deficiency in discharge.												
		1902–3	1903–4	1904–5	1905–6	1906–7	1907–8	1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15
50	5.7	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
100	11.4	.....	.....	.....	1	.....	3	4	1	5	.....	1	.....	1
200	22.7	.....	.....	3	4	5	5	19	13	23	5	10	7	12
400	45.5	3	8	8	4	10	9	29	24	28	15	17	9	13
600	68.2	4	10	17	4	17	12	31	25	35	18	20	14	18
800	90.9	5	11	17	5	20	12	33	26	40	19	22	17	20
1,000	114	5	13	18	6	22	14	34	26	50	20	23	17	29
1,500	170	5	21	28	12	33	20	61	47	97	29	41	29	36
2,000	227	13	47	51	21	53	39	111	93	165	43	81	48	89
2,500	284	29	78	89	49	83	54	187	166	219	84	111	93	115
3,000	341	56	141	164	73	134	90	208	199	255	134	137	129	154
3,500	398	80	191	197	104	196	103	216	211	285	165	154	160	171
4,000	455	102	215	226	139	217	121	231	222	292	188	171	194	188
4,500	511	126	238	248	165	235	131	244	234	297	209	188	218	208
5,000	568	141	243	262	189	254	140	252	249	307	235	206	234	230
5,500	625	168	256	272	207	264	155	266	269	312	250	223	252	253
6,000	682	180	266	284	221	269	170	276	279	315	257	240	260	263
6,500	738	196	273	297	238	275	184	287	284	319	261	258	267	280
7,000	795	209	277	308	247	281	200	291	286	322	267	271	270	294
7,500	852	225	279	315	260	285	211	296	293	323	272	283	279	302
8,000	909	238	284	318	270	290	223	301	297	326	275	288	281	310
8,500	966	249	287	321	280	295	232	302	301	326	280	297	287	318
9,000	1,020	256	290	325	289	300	241	308	302	328	282	302	293	322
10,000	1,140	272	295	330	305	311	262	315	306	329	291	320	298	331
12,000	1,360	290	304	338	320	330	292	334	330	335	313	332	305	342
16,000	1,820	309	326	343	344	358	335	350	344	356	332	347	312	354
20,000	2,270	326	341	352	356	362	354	360	355	364	344	354	337	357
25,000	2,840	344	353	355	359	364	364	362	362	365	356	359	350	361
30,000	3,410	353	357	358	362	365	365	363	365	.....	365	362	361	364
40,000	4,550	363	364	361	365	.....	366	365	.....	.....	366	365	365	365
50,000	5,680	365	366	365	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
70,000	6,820	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
90,000	7,950	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTE.—The above table gives the theoretical horsepower per foot fall that may be developed at different rates of discharge, and shows the number of days on which the discharge and corresponding horsepower were respectively less than the amounts given in the columns for discharge and horsepower. In using this table, allowance should be made for the various losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

SOUTH BRANCH OF NASHUA RIVER (WACHUSETT DRAINAGE BASIN) NEAR CLINTON, MASS.

LOCATION.—At Wachusett dam near Clinton.

DRAINAGE AREA.—The area of the basin has been artificially changed at times in connection with changes in the water-supply systems of the Metropolitan district. From 1896 to 1907, 119 square miles; 1908 to 1913, 118.19 square miles; 1914 to 1915, 108.84 square miles.

RECORDS AVAILABLE.—July, 1896, to September, 1915.

DETERMINATION OF DISCHARGE.—South Branch of Nashua River has been utilized in the water-supply development for the Metropolitan district of Boston.

The flow is affected by storage in Wachusett Reservoir (Pl. XI) and several ponds. Investigations of the water supply have been made by the Metropolitan Water Board since July, 1896. Beginning with 1897 estimates of discharge have been corrected for gain or loss in the reservoir and ponds, so that the record shows approximately the natural flow of the stream.

The yield per square mile is the yield of the drainage area, including the water surfaces. For the years 1897 to 1902, inclusive, the water surface formed 2.2 per cent of the total area; 1903, 2.4 per cent; 1904, 3.6 per cent; 1905, 4.1 per cent; 1906, 5.1 per cent; 1907, 6 per cent; 1908–1915, 7 per cent.

COOPERATION.—Complete record for the calendar years furnished by the Metropolitan Water Board of Boston; changed to climatic year by engineers of the Geological Survey.

Yield, in second-feet, per square mile of South Branch of Nashua River[1] *(Wachusett drainage basin) near Clinton, Mass., for the years ending Sept. 30, 1896–1915.*

Year.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Mean.
1896.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	0.519	0.467	0.707	.....
1896–97..	1.228	1.410	1.447	1.232	1.440	4.270	2.525	1.800	1.828	2.231	1.386	.588	1.787
1897–98..	.377	1.984	3.521	2.418	2.530	4.778	3.137	2.151	1.281	.514	2.049	1.045	2.149
1898–99..	2.334	3.358	3.189	3.236	1.687	4.295	5.224	1.334	.869	.548	.365	.387	2.238
1899–1900	.379	.665	.555	1.232	6.271	5.759	2.444	2.139	.894	.336	.304	.197	1.735
1900–1901	.437	1.354	2.429	.803	.551	4.205	7.711	4.222	1.525	.738	.792	.495	2.111
1901–2...	1.001	.799	5.002	2.579	2.168	6.176	3.341	1.595	.635	.452	.459	.372	2.056
1902–3...	1.471	.982	2.859	1.957	3.300	5.297	3.463	.880	3.297	.966	.734	.580	2.140
1903–4...	1.065	.981	1.476	1.020	1.434	4.653	4.617	2.317	1.179	.769	.549	.764	1.735
1904–5...	.538	.530	.680	1.959	.700	4.648	2.502	.688	.838	.565	.497	1.900	1.341
1905–6...	.567	.684	1.575	1.751	1.588	2.878	3.263	2.371	1.831	1.127	.915	.428	1.582
1906–7...	.820	1.160	1.229	2.257	1.070	2.626	2.221	1.494	1.196	.518	.135	1.254	1.332
1907–8...	2.138	3.930	3.035	2.689	2.685	3.391	1.964	2.188	.624	.341	.685	.136	1.989
1908–9...	.245	.194	.599	.916	3.955	3.294	3.748	1.876	.977	.361	.299	.321	1.379
1909–10..	.139	.561	.831	2.857	2.854	4.084	1.600	.941	1.274	.096	.288	.224	1.304
1910–11..	.106	.548	.605	1.196	.967	2.072	2.155	.713	.543	.087	.291	.281	.795
1911–12..	1.111	1.601	1.650	1.208	1.434	4.380	3.530	2.780	.512	.208	.194	.138	1.564
1912–13..	.224	.683	1.227	2.188	1.342	3.501	3.224	1.607	.433	.030	.092	.338	1.241
1913–14..	1.049	1.021	1.478	1.532	1.827	4.853	4.012	2.629	.491	.510	.404	−.018	1.652
1914–15..	.211	.326	.576	3.190	3.034	.885	1.443	.704	.353	1.676	2.564	.244	1.260

[1] See statement in station description.

NOTE.—Figures for 1896 have not been corrected for loss and gain by storage in ponds and reservoirs.

Summary of yield and rainfall in South Branch of Nashua River (Wachusett drainage basin) for the years ending Sept. 30, 1897–1915.

[Drainage area, 108.84[1] square miles.]

Month.	Yield.					Average rainfall in inches.
	Total in million gallons.	Per square mile.		Average depth in inches on drainage area.	Per cent of rainfall.	
		Million gallons per day.	Second-feet.			
1897–1915.						
October	33,668.5	0.525	0.812	0.936	26.9	3.483
November	48,056.5	.775	1.199	1.338	39.5	3.388
December	74,064.9	1.155	1.787	2.060	50.4	4.086
January	79,014.2	1.233	1.907	2.198	58.2	3.779
February	80,831.7	1.388	2.148	2.249	60.8	3.702
March	165,840.7	2.587	4.002	4.614	111.1	4.153
April	131,084.5	2.113	3.268	3.648	95.5	3.821
May	75,080.0	1.171	1.812	2.089	62.2	3.360
June	43,426.4	.700	1.083	1.208	34.2	3.533
July	26,323.5	.411	.635	.732	17.6	4.165
August	28,114.8	.439	.678	.782	18.1	4.316
September	20,367.1	.328	.508	.567	16.2	3.494
The year	805,872.8	1.068	1.652	22.421	49.5	45.280

[1] Used as basis of computations in table. See "Drainage area" in station description. Figures in summary represent average quantities.

CONCORD RIVER AT LOWELL, MASS.

LOCATION.—At Lawrence Street Bridge in the city of Lowell.

DRAINAGE AREA: Square miles.

Total of Concord River above Lowell 376.5

Net drainage area, excluding diversions ..... [1]301.3

RECORDS AVAILABLE.—January 1, 1901, to September 30, 1915.

GAGES.—Staff gages on east bank above dam and on west bank above head gates.

DISCHARGE MEASUREMENTS.—Mill use determined from water-wheel ratings checked by current-meter measurements. Water wasting over dam computed from weir formula with some corrections for depth.

CHANNEL AND CONTROL.—Control formed by crest of dam and head gates to canal. Channel of river about 100 feet wide from Lawrence Street bridge to North Billerica, 4 miles. Pondage drawn on but little.

EXTREMES OF DISCHARGE.—Maximum flow, 1901–1915, occurred March 3, 1902; approximate discharge, 4,148 second-feet. Minimum flow occurred August 27–31, 1907; discharge, 11 second-feet, through water wheels.

WINTER FLOW.—Not affected by ice.

DIVERSIONS.—75.2 square miles above dam No. 1 of Boston Water Works, and including Farm Pond, diverted from the upper part of Sudbury River for municipal supply for city of Boston. Only waste water from this area reaches the Concord River.

REGULATION.—Distribution of flow somewhat affected by operation of mills between North Billerica and Lowell.

ACCURACY.—Records considered fair.

COOPERATION.—Records furnished by Arthur T. Safford, hydraulic engineer, for the owners of the water power taken from Wamesit Canal.

[1] Occasional waste water reaches the river from diverted area above dam No. 1.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1901.												
1	.....	.....	.....	355	278	193	1,235	1,902	2,030	241	390	a 361
2	.....	.....	.....	359	279	227	1,182	1,703	a1,884	272	379	a 343
3	.....	.....	.....	349	a 258	a 242	1,192	1,738	1,738	276	386	326
4	.....	.....	.....	339	237	256	1,296	1,608	1,625	a 252	a 370	299
5	.....	.....	.....	365	173	298	1,516	a1,562	1,483	227	355	278
6	.....	.....	.....	a 319	173	391	1,751	1,516	1,329	253	320	278
7	.....	.....	.....	273	115	407	a2,080	1,350	1,225	a 237	306	278
8	.....	.....	.....	293	115	378	2,408	1,260	1,120	222	325	a 252
9	.....	.....	.....	287	115	392	2,914	1,159	a 973	230	324	225
10	.....	.....	.....	289	a 144	a 533	3,062	1,094	825	230	363	242
11	.....	.....	.....	280	173	675	2,892	1,126	771	260	a 337	222
12	.....	.....	.....	294	130	1,130	2,703	a1,132	686	262	311	208
13	.....	.....	.....	a 278	130	1,520	2,613	1,138	661	277	310	207
14	.....	.....	.....	262	145	1,709	a2,313	1,141	623	a 241	277	230
15	.....	.....	.....	287	159	1,647	2,012	1,131	556	206	292	a 229
16	.....	.....	.....	287	231	1,623	1,774	1,047	a 508	194	277	228
17	.....	.....	.....	294	a 231	a1,354	1,643	989	459	249	308	230
18	.....	.....	.....	306	231	1,085	1,559	936	437	259	a 263	228
19	.....	.....	.....	294	224	976	1,395	a1,028	391	253	218	241
20	.....	.....	.....	a 287	239	865	1,367	1,120	358	277	229	254
21	.....	.....	.....	279	239	843	a1,339	1,427	360	a 260	232	278
22	.....	.....	.....	295	244	901	1,310	1,635	325	243	204	a 262
23	.....	.....	.....	260	256	856	1,219	1,703	a 324	242	204	247
24	.....	.....	.....	291	a 237	a 892	1,292	1,644	322	242	233	236
25	.....	.....	.....	291	217	927	1,495	1,564	334	253	a 260	228
26	.....	.....	.....	301	199	1,045	1,960	a1,619	337	248	286	235
27	.....	.....	.....	a 285	201	1,224	2,258	1,674	306	275	318	235
28	.....	.....	.....	269	194	1,414	a2,264	1,780	300	a 282	370	265
29	.....	.....	.....	260	.....	1,426	2,271	1,893	282	288	370	a 256
30	.....	.....	.....	259	.....	1,371	2,019	2,050	a 262	319	343	247
31	.....	.....	.....	272	.....	a1,303	.....	2,084	.....	371	378	.....
1901–2.												
1	233	277	a 464	1,868	826	1,946	1,205	588	a 347	188	175	a 117
2	233	277	444	1,840	a 831	a3,047	1,185	609	332	182	189	120
3	251	a 271	434	1,859	836	4,148	1,147	654	305	182	a 185	110
4	239	265	215	1,735	841	3,908	941	a 661	305	a 179	180	99
5	277	246	302	a1,578	782	3,316	765	669	301	a 175	159	127
6	a 265	253	314	1,420	810	2,885	a 703	588	303	a 172	136	126
7	252	265	380	1,226	746	2,929	641	644	303	169	184	a 138
8	251	277	a 357	1,053	725	2,704	625	670	a 286	138	187	151
9	263	278	333	932	a 602	a2,463	1,186	639	269	138	183	151
10	239	a 272	392	741	479	2,222	1,436	584	259	138	a 200	164
11	239	267	468	766	459	2,048	1,636	a 552	275	138	217	164
12	278	256	514	a 688	418	2,179	1,656	519	231	139	249	164
13	a 268	279	602	610	393	2,206	a1,645	441	206	a 139	241	196
14	259	267	640	523	380	2,205	1,634	406	213	139	268	a 180
15	320	266	a 880	532	364	2,165	1,507	375	a 212	125	306	164
16	387	280	1,120	545	a 288	a2,165	1,412	365	212	114	316	176
17	473	a 273	1,033	567	212	2,165	1,283	363	189	74	a 280	188
18	495	267	1,020	612	241	2,217	1,161	a 319	195	74	243	181
19	517	269	960	a 544	280	2,004	a1,043	274	200	74	201	181
20	a 479	266	958	475	280	1,926	a 924	270	200	a 100	217	208
21	440	269	901	486	283	1,836	806	282	221	126	206	a 216
22	407	267	a1,024	661	283	1,687	745	312	a 211	176	192	224
23	394	278	1,147	826	a 293	a1,634	696	312	201	189	206	252
24	373	a 340	1,264	922	304	1,581	574	288	194	206	a 197	245
25	332	402	a1,178	910	308	1,502	590	a 293	188	243	187	231
26	324	490	1,092	a 969	396	1,415	635	297	195	212	163	225
27	a 288	558	962	1,028	640	1,260	a 597	403	195	a 228	175	224
28	252	a 535	890	983	950	1,170	559	380	201	215	175	a 238
29	276	511	a1,175	868	.....	1,219	534	398	a 198	189	125	252
30	277	485	1,460	851	.....	a1,211	584	377	195	189	110	252
31	277	.....	1,770	870	.....	1,203	.....	a 362	.....	189	a 113	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1902–3.												
1	293	791	319	1,050	a 780	a1,117	1,622	529	235	1,460	288	200
2	315	a 640	307	992	778	1,451	1,627	524	226	1,321	a 276	213
3	322	490	298	958	880	1,668	1,718	a 450	218	1,162	265	213
4	334	472	337	a1,061	915	1,694	1,654	395	222	a1,054	256	213
5	a 333	400	386	1,159	1,080	1,650	a1,533	404	221	a 966	271	214
6	331	401	414	1,071	1,139	1,615	1,418	376	219	855	271	a 214
7	307	361	a 412	1,009	1,159	1,431	1,345	376	a 219	826	298	a 213
8	304	382	410	974	a1,331	a1,330	1,307	371	219	683	334	212
9	340	a 351	393	903	1,114	1,254	1,397	382	218	603	a 327	214
10	340	320	360	899	1,119	1,343	1,428	a 382	209	545	320	213
11	350	324	357	a 904	1,178	1,488	1,475	370	219	523	327	213
12	a 348	302	337	904	1,221	1,693	a1,506	360	250	a 473	303	214
13	346	298	399	852	1,277	1,707	1,536	363	330	416	298	a 213
14	365	312	a 326	746	1,247	1,683	1,470	349	a 368	395	304	187
15	352	343	253	651	a1,195	a1,576	1,410	332	414	388	288	163
16	311	a 325	318	575	1,123	1,457	1,333	345	618	369	a 301	164
17	330	307	402	536	980	1,335	1,273	a 323	693	354	314	165
18	361	306	447	a 516	862	1,225	1,252	296	768	316	252	165
19	a 337	306	510	486	777	1,196	a1,247	305	793	a 333	255	165
20	312	302	608	484	870	1,129	a1,243	305	803	335	265	a 164
21	265	303	a 894	624	888	1,116	1,227	292	a1,045	345	239	149
22	263	330	1,180	704	a 919	a1,116	1,112	274	1,298	351	239	136
23	365	a 312	1,204	678	908	1,121	1,050	283	1,514	360	a 217	136
24	281	294	1,194	719	765	1,200	953	a 285	2,326	368	195	136
25	280	276	a1,189	a 666	682	1,235	1,001	262	2,521	387	162	136
26	a 272	302	1,184	618	703	1,724	a 875	237	2,508	a 368	141	137
27	264	a 315	1,162	580	702	1,837	732	237	2,347	340	163	a 139
28	342	328	a1,160	611	783	1,793	700	237	a2,072	333	164	142
29	381	355	1,157	583	.....	a1,723	635	271	1,758	297	188	140
30	444	a 337	1,187	690	.....	1,638	604	a 259	1,552	328	a 192	140
31	530	.....	1,099	794	.....	1,581	.....	a 247	.....	321	195	.....
1903–4.												
1	135	a 314	234	309	239	447	1,151	a2,410	353	340	191	162
2	136	303	253	298	238	443	1,186	2,861	352	339	190	163
3	99	273	267	a 267	239	420	a1,190	2,646	373	a 338	196	164
4	a 118	273	239	237	238	472	1,195	2,463	342	a 337	191	a 159
5	136	273	244	237	238	502	1,155	2,174	a 354	336	191	a 153
6	136	273	a 247	237	226	a 475	1,068	1,930	365	341	a 191	148
7	129	284	251	237	a 232	447	993	1,700	384	342	a 197	109
8	158	a 278	260	237	238	668	982	a1,480	403	325	204	85
9	159	273	235	237	238	827	958	1,259	389	284	231	31
10	161	272	326	a 212	207	1,098	a1,080	1,151	379	a 287	252	27
11	a 187	260	334	187	203	1,322	1,203	1,067	396	291	252	a 37
12	212	238	a 329	187	208	1,362	1,360	1,050	a 374	263	248	47
13	245	244	a 323	187	213	a1,319	1,405	986	352	264	212	64
14	299	249	318	214	a 213	1,277	1,338	932	346	239	a 212	64
15	312	a 252	333	243	213	1,171	1,285	a 841	351	248	212	320
16	311	239	372	240	212	1,111	1,172	750	338	205	239	430
17	275	224	354	a 241	212	987	a1,107	711	269	a 209	243	456
18	a 347	330	333	241	212	879	1,042	651	232	213	224	a 467
19	417	370	331	239	212	665	a 971	610	a 254	162	210	478
20	459	386	a 343	239	196	a 768	900	620	276	110	230	451
21	450	394	355	215	a 217	872	766	628	256	106	a 248	392
22	404	a 379	433	237	239	989	713	a 634	247	110	266	359
23	406	358	418	239	263	1,117	692	640	247	110	263	338
24	383	357	433	a 239	341	1,136	a 639	580	214	a 111	275	317
25	a 375	360	a 409	239	467	1,271	585	474	198	113	275	a 309
26	357	a 337	a 384	231	414	1,441	511	493	a 223	110	267	301
27	344	316	a 360	237	379	a1,465	478	465	249	135	279	255
28	336	316	336	239	a 423	1,490	698	366	249	163	a 271	235
29	328	a 310	329	239	468	1,439	1,344	a 362	250	187	263	236
30	350	298	325	226	.....	1,338	1,959	a 358	249	187	234	258
31	325	.....	317	a 233	.....	1,233	.....	354	.....	a 189	185	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1904–5.												
1	275	273	186	a 300	282	184	1,792	349	164	199	206	58
2	a 266	236	162	310	287	178	a1,606	344	163	a 216	200	58
3	256	163	162	358	281	184	1,420	334	163	a 234	202	a 360
4	235	163	a 163	325	265	184	1,316	333	a 163	a 251	205	a 662
5	211	164	164	290	a 252	a 184	1,151	322	163	268	186	964
6	211	a 164	163	318	239	184	1,139	310	162	187	a 170	1,198
7	211	164	163	380	240	184	1,141	a 305	128	188	154	1,266
8	213	163	163	a 615	240	184	1,152	301	111	188	140	1,259
9	a 183	163	149	849	240	214	a1 101	291	129	a 187	122	1,164
10	154	163	137	1,052	240	333	1,050	285	125	186	131	a 1,007
11	158	163	a 137	1,082	241	407	930	269	a 156	146	154	850
12	162	163	137	1,062	a 242	a 532	925	269	187	128	129	781
13	164	a 187	137	1,030	242	656	837	271	252	93	a 135	745
14	188	210	123	989	241	669	823	a 275	307	92	141	594
15	213	303	82	a 876	241	668	797	278	322	93	106	538
16	a 213	338	83	764	240	617	a 741	287	338	a 140	117	503
17	213	338	83	678	240	637	685	294	334	186	155	a 463
18	226	331	a 83	589	224	598	663	305	a 307	186	155	423
19	237	343	83	533	a 230	a 894	596	322	279	186	153	381
20	236	a 330	83	529	237	1,190	528	343	275	186	a 170	279
21	247	316	83	510	238	1,388	485	a 335	266	186	188	361
22	258	304	83	a 477	210	1,281	a 472	327	316	185	188	353
23	a 270	298	83	443	214	1,296	a 460	318	375	a 185	187	350
24	282	a 284	83	402	208	1,329	447	318	406	186	128	a 329
25	267	271	a 83	371	209	1,370	414	318	a 429	127	129	308
26	257	257	a 83	287	a 202	a1,504	385	313	452	109	129	320
27	255	a 257	134	283	196	1,638	383	316	422	92	a 129	301
28	245	256	186	303	184	1,920	367	a 309	392	92	129	282
29	236	255	212	a 302	.....	2,027	358	301	399	92	127	276
30	a 236	245	238	301	.....	1,942	a 353	216	346	a 133	82	277
31	237	.....	257	301	.....	1,880	.....	165	.....	174	57	.....
1905–6.												
1	a 283	187	290	593	478	1,198	a1,706	561	1,285	a 385	350	227
2	289	187	323	538	442	791	1,746	533	1,273	435	370	a 209
3	298	187	a 348	517	412	718	1,702	506	a1,203	448	399	a 190
4	294	188	374	530	a 396	a 949	1,597	513	1,133	a 481	433	172
5	301	a 269	440	581	379	1,179	1,474	473	996	513	a 450	176
6	289	351	464	628	302	1,460	1,348	a 463	925	483	468	178
7	310	305	452	a 640	338	1,513	1,253	453	810	478	450	177
8	a 289	312	446	653	321	1,500	a1,227	456	695	a 460	445	178
9	268	307	442	565	312	1,381	1 201	475	650	443	425	a 183
10	238	307	a 379	527	310	1,418	1,241	463	a 615	425	405	187
11	238	308	316	472	a 306	a1,388	1,347	458	580	375	423	156
12	238	a 307	333	432	303	1,358	1,482	455	519	357	a 402	138
13	211	306	327	422	316	1,113	1,554	a 440	501	354	381	62
14	212	278	341	a 412	310	1,087	1,671	426	454	351	326	63
15	a 212	265	311	402	291	1,024	a1,605	391	421	a 342	310	63
16	212	237	305	427	297	853	1,538	380	383	333	297	a 99
17	211	239	a 299	510	308	790	1,457	355	a 421	307	290	135
18	187	240	294	550	a 309	a 780	1,373	352	459	303	271	82
19	188	a 240	270	565	309	770	1,307	351	491	293	a 262	83
20	188	240	269	553	311	718	1,241	a 337	586	288	253	76
21	181	238	282	a 551	320	718	1,178	323	620	a 296	208	98
22	a 208	226	346	550	545	698	a1 064	294	596	a 305	209	27
23	236	238	525	560	780	648	949	296	554	313	225	a 93
24	318	237	a 530	595	932	580	882	281	a 522	312	219	158
25	295	239	a 534	627	a 975	a 554	859	262	491	313	256	158
26	279	a 212	539	652	1,017	529	782	294	448	312	a 250	157
27	270	185	514	662	1,023	579	747	a 345	408	312	244	157
28	263	160	460	a 626	921	818	689	396	369	311	251	157
29	a 266	161	453	590	.....	1,129	a 679	669	351	a 314	262	157
30	270	a 225	508	535	.....	1,436	669	a 933	335	316	265	a 158
31	238	.....	a 550	490	.....	1,666	.....	1,196	.....	315	199	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1906–7.												
1	158	284	300	611	339	303	889	473	342	166	124	a 62
2	152	271	a 307	838	340	293	753	453	a 349	166	125	a 114
3	152	281	314	990	a 347	a 304	690	438	356	166	108	165
4	151	a 286	259	1,143	354	315	677	415	411	a 198	a 114	164
5	150	291	240	1,481	347	318	651	a 409	456	229	119	164
6	150	238	239	a1,294	374	317	621	403	523	260	119	184
7	a 154	243	240	1,106	383	331	a 576	434	530	a 213	119	185
8	158	243	239	1,065	382	328	531	421	516	166	119	a 210
9	164	242	a 241	1,049	362	324	542	419	a 503	165	119	236
10	296	293	243	960	a 375	a 310	602	410	491	165	118	237
11	120	a 300	243	914	387	297	640	397	479	164	a 106	238
12	120	308	243	910	358	328	693	a 424	438	164	94	241
13	120	339	249	a 790	342	322	745	450	411	165	100	223
14	a 142	360	241	670	352	318	a 826	439	366	a 177	82	222
15	163	347	242	637	377	342	906	425	350	188	82	a 218
16	163	372	a 264	514	378	549	901	415	a 345	216	72	213
17	84	400	286	430	a 369	a 787	879	395	339	216	72	213
18	84	a 428	268	435	360	1,025	851	404	313	219	a 62	164
19	84	455	282	459	372	1,220	a 802	a 413	277	168	53	164
20	68	465	286	a 468	354	1,358	a 754	421	276	169	53	81
21	a 106	465	312	476	356	1,350	a 705	397	278	a 169	53	81
22	144	440	322	541	336	1,318	657	393	303	168	69	a 114
23	197	420	a 310	533	327	1,238	581	385	a 299	168	75	148
24	197	433	298	453	a 325	a1,210	548	365	295	166	64	316
25	189	a 394	a 303	417	323	1,182	568	355	295	164	a 69	327
26	293	355	308	376	318	1,163	551	a 335	236	164	53	341
27	293	354	293	a 358	312	1,140	536	316	210	164	11	348
28	a 293	335	313	339	306	1,054	a 528	367	187	a 154	11	357
29	292	a 329	313	401	.....	992	520	368	164	143	11	a 458
30	282	323	a 307	368	.....	959	520	a 362	a 165	130	11	558
31	272	.....	302	330	.....	a 924	.....	355	.....	118	11	.....
1907–8.												
1	578	525	a1,040	1,243	511	a 789	1,112	412	531	119	137	155
2	588	483	970	1,218	a 572	866	1,080	394	535	119	a 149	155
3	550	a 540	894	1,186	633	921	1,084	a 401	602	119	160	155
4	590	597	814	1,186	640	829	1,128	409	588	a 119	135	155
5	544	635	757	a1,173	586	879	a1,085	398	532	a 119	135	155
6	a 513	706	691	1,161	578	861	1,042	374	582	119	188	a 166
7	482	918	656	1,108	568	910	980	376	a 512	119	201	a 177
8	586	1,040	a 641	1,091	484	a 955	969	461	442	119	155	188
9	621	1,058	627	1,221	a 450	1,000	907	572	415	100	a 214	160
10	710	a1,144	627	1,318	417	970	868	a 699	380	83	274	135
11	728	1,231	735	1,250	397	1,027	935	826	366	83	319	135
12	752	1,261	862	a1,343	366	1,045	a 868	805	289	a 83	309	135
13	a 696	1,234	956	1,436	380	1,078	800	791	301	83	302	a 128
14	641	1,124	1,010	1,402	372	1,148	758	831	a 296	73	298	121
15	577	1,064	a 985	1,479	627	a1,190	747	807	290	83	246	95
16	515	1,004	959	1,435	a 959	1,233	721	709	231	83	a 261	81
17	485	a 940	972	1,420	1,291	1,094	687	a 653	252	83	276	81
18	422	875	905	1,386	1,247	1,015	725	598	226	83	255	74
19	418	764	875	a1,226	1,172	1,098	a 680	528	153	a 83	214	25
20	a 387	730	807	1,066	1,169	1,251	a 635	494	154	83	159	a 26
21	357	689	733	1,017	1,137	1,290	590	451	a 136	83	214	26
22	366	669	a 714	929	1,128	a1,305	553	429	119	83	161	26
23	355	680	695	847	a1,092	1,319	545	468	119	83	a 188	26
24	350	a 697	938	761	1,055	1,277	532	a 471	119	83	215	26
25	325	713	a1,032	695	822	1,261	530	474	119	83	215	25
26	318	821	1,125	a 756	725	1,257	a 497	487	119	a 130	189	25
27	a 328	826	1,162	817	727	1,132	464	465	119	176	149	a 26
28	337	a 976	1,150	794	692	1,219	449	429	a 119	189	136	26
29	387	1,125	a1,172	756	712	a1,226	420	422	119	188	100	27
30	484	1,110	1,193	561	.....	1,234	394	a 458	119	187	a 123	27
31	515	.....	1,226	550	.....	1,182	.....	a 495	.....	187	145	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1908–9.												
1	25	a 228	165	165	291	1,682	1,056	848	406	164	a 84	66
2	24	204	165	120	268	1,622	976	a1,032	402	112	84	98
3	24	211	165	a 154	245	1,497	934	1,215	387	112	84	120
4	a 25	212	165	189	214	1,346	a 893	1,093	368	a 112	84	120
5	25	200	165	212	188	1,189	852	1,015	352	a 112	84	a 105
6	25	174	a 165	212	164	1,114	787	980	a 412	112	84	a 91
7	26	155	165	211	a 276	a 977	755	953	472	111	84	76
8	27	a 184	212	212	388	840	730	889	486	112	a 84	76
9	27	213	237	154	484	775	677	a 864	514	98	84	118
10	26	212	262	a 203	565	800	640	839	461	83	84	83
11	a 26	211	293	251	743	723	a 630	787	443	a 84	45	84
12	26	212	332	311	789	668	619	680	431	84	46	a 84
13	81	211	a 309	275	667	730	550	575	a 419	84	46	84
14	100	212	286	275	a 711	a 677	503	520	407	84	46	84
15	101	a 212	287	274	755	625	692	499	358	83	a 45	84
16	101	212	281	268	645	590	793	a 459	351	45	43	84
17	101	212	281	a 268	641	567	856	419	317	46	54	84
18	a 100	212	274	268	597	571	a 905	457	313	a 105	103	83
19	100	212	221	265	613	502	a 953	462	307	164	103	a 53
20	100	212	a 244	266	771	459	1,002	430	a 314	164	103	23
21	100	213	267	265	a1,124	a 441	998	389	321	164	103	73
22	100	a 212	243	265	1,476	423	953	365	288	164	a 103	83
23	100	212	213	240	1,444	425	920	a 380	261	164	103	84
24	101	212	180	a 255	1,520	403	883	394	256	164	103	102
25	a 101	211	a 177	271	1,726	416	a 912	371	215	a 164	103	102
26	100	a 211	a 173	314	1,649	556	942	374	213	164	103	a 122
27	101	211	a 170	313	1,809	727	877	371	a 214	164	103	141
28	121	211	166	318	a1,745	a 907	865	358	214	123	80	210
29	121	a 188	165	313	.....	1,088	809	a 370	188	84	a 73	234
30	121	164	165	307	.....	1,133	893	a 382	164	84	66	234
31	252	.....	165	a 299	.....	1,143	.....	394	.....	84	66	.....
1909–10.												
1	234	120	317	187	1,147	1,640	501	a 577	283	294	86	69
2	235	120	322	a 188	1,069	2,183	498	552	280	265	86	37
3	a 235	152	299	188	1,005	2,572	a 475	555	286	a 253	86	25
4	235	235	294	163	917	2,577	453	551	232	a 240	86	a 25
5	214	238	a 288	164	829	2,472	423	510	a 254	228	86	a 25
6	185	250	282	163	a 806	a2,366	434	455	276	202	112	25
7	162	a 242	236	312	783	2,260	409	452	282	203	a 108	101
8	164	233	215	321	615	2,165	394	a 436	288	192	104	101
9	164	228	215	a 339	580	2,098	387	420	319	182	86	101
10	a 164	230	215	357	555	2,026	a 406	390	289	a 198	64	101
11	164	242	215	405	545	1,940	424	353	268	214	64	a 101
12	164	229	a 215	455	514	1,871	381	379	a 357	136	64	101
13	164	200	214	443	a 507	a1,660	386	381	445	161	83	101
14	164	a 214	293	410	501	1,449	377	314	465	101	a 84	101
15	165	228	322	407	516	1,326	377	a 316	467	87	84	84
16	164	199	337	a 370	511	1,245	387	318	448	87	83	25
17	a 164	184	344	334	578	1,170	a 378	261	396	a 94	83	25
18	164	164	346	345	534	1,033	369	288	416	101	83	a 25
19	164	156	a 343	403	661	983	a 422	297	a 428	101	111	25
20	132	157	339	435	a 659	a 908	474	298	440	87	113	25
21	101	a 174	317	465	656	833	466	280	437	87	a 105	25
22	101	190	302	781	726	778	488	a 294	405	91	97	25
23	101	165	294	a1,055	734	719	509	308	392	117	99	25
24	a 101	165	270	1,328	731	708	a 486	304	337	a 102	40	25
25	101	a 185	a 251	1,384	668	671	462	298	241	87	101	a 38
26	120	204	a 232	1,420	761	610	455	296	a 288	90	101	51
27	120	204	213	1,381	a1,006	a 611	483	253	336	137	100	50
28	120	a 270	214	1,368	1,251	612	514	222	326	136	a 100	69
29	120	336	214	1,318	.....	566	567	a 242	299	136	101	69
30	120	321	200	a1,254	.....	546	602	a 263	300	136	69	69
31	a 120	.....	187	1,191	.....	524	.....	283	.....	a 111	69	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1910–11.												
1	69	44	225	a 294	269	407	715	402	226	111	164	185
2	a 69	45	219	319	269	417	a 686	378	187	a 73	164	186
3	69	44	169	342	269	392	656	398	163	35	164	186
4	69	44	a 199	377	256	366	638	357	a 142	a 27	135	a 186
5	69	156	228	356	a 321	a 344	608	343	120	19	135	a 186
6	69	a 211	233	329	386	321	646	344	118	16	a 135	185
7	69	267	205	422	376	296	715	a 342	155	16	135	173
8	69	251	184	a 407	385	295	749	340	170	16	135	134
9	a 47	240	191	392	403	280	a 818	294	241	a 16	135	135
10	25	229	146	300	380	280	887	294	255	16	135	a 135
11	20	264	a 140	334	341	281	928	294	a 261	16	118	135
12	15	239	134	341	a 326	a 293	903	223	268	16	101	135
13	20	a 254	135	310	311	305	874	238	267	16	a 100	135
14	20	269	135	350	283	303	849	a 238	255	16	100	135
15	21	250	142	a 302	252	392	849	239	254	16	100	123
16	a 22	249	106	254	247	511	a 805	239	254	a 16	100	83
17	23	215	112	260	240	483	760	239	266	16	100	a 83
18	25	227	a 122	215	214	517	661	232	a 260	16	100	84
19	25	180	131	236	a 230	a 623	635	213	253	16	100	89
20	26	a 211	163	204	247	729	608	211	253	16	a 97	89
21	42	242	139	178	245	770	598	a 215	231	16	94	95
22	58	219	106	a 177	244	770	614	219	216	16	80	94
23	a 44	212	88	176	263	745	a 581	219	212	a 24	88	95
24	30	a 219	127	164	263	710	549	215	202	32	88	a 95
25	54	226	a 216	172	256	674	534	212	a 206	59	93	94
26	65	219	a 306	160	a 203	650	504	213	210	77	88	105
27	140	a 202	395	150	350	626	466	213	183	56	a 87	103
28	163	186	330	257	408	570	427	a 195	131	56	87	106
29	153	187	337	a 307	.....	574	443	176	100	55	98	100
30	a 116	197	330	356	.....	655	a 423	a 201	92	a 110	148	99
31	79	.....	268	254	.....	693	.....	226	.....	164	184	.....
1911–12.												
1	a 132	278	514	604	322	1,196	1,649	720	713	187	157	a 81
2	164	275	502	527	304	1,198	1,695	715	a 723	151	107	a 80
3	119	261	a 494	502	346	a1,059	1,702	659	733	137	182	80
4	165	254	486	469	a 333	921	1,734	605	690	a 160	a 191	120
5	187	a 246	407	441	319	894	1,734	a 584	706	122	200	110
6	187	238	391	328	306	849	1,750	562	625	140	159	116
7	187	267	371	a 339	303	786	a1,666	562	540	a 131	135	137
8	a 187	254	350	350	308	753	1,582	577	513	122	123	a 118
9	187	251	333	349	305	713	1,518	587	a 462	69	89	99
10	188	255	a 338	349	297	a 669	1,481	747	412	69	85	100
11	188	255	342	354	a 303	626	1,411	745	380	69	a 95	116
12	a 188	a 256	330	345	308	596	1,347	a 812	361	101	104	125
13	187	256	339	342	255	956	1,323	879	349	101	115	110
14	187	256	320	a 333	232	1,214	a1,175	888	356	a 111	136	100
15	a 187	300	324	325	219	1,614	1,028	814	363	122	157	a 115
16	187	312	332	322	191	2,102	973	759	a 357	153	127	130
17	188	339	a 396	306	184	a2,250	904	853	351	121	136	134
18	188	379	459	309	a 190	2,399	906	838	327	131	a 169	139
19	188	a 446	484	337	196	2,371	a 965	a 848	326	158	203	140
20	188	513	466	373	221	2,220	a1,024	859	291	156	174	129
21	216	510	434	a 405	249	2,090	a1,083	806	295	a 195	159	129
22	a 272	472	387	437	a 494	1,938	1,142	764	285	234	150	a 120
23	327	461	502	423	738	1,696	1,152	754	a 284	233	150	111
24	327	448	a 583	449	813	a1,696	1,108	735	282	238	150	113
25	334	512	a 664	417	a 919	1,697	1,021	704	267	237	a 135	116
26	332	a 519	745	380	1,025	1,572	964	a 754	246	214	120	119
27	323	526	753	390	1,060	1,357	885	805	214	173	123	110
28	324	524	776	a 377	1,207	1,217	a 827	807	192	a 185	125	132
29	a 310	526	693	364	1,195	1,267	769	753	197	197	131	a 121
30	296	a 520	707	322	.....	1,600	732	a 720	a 192	203	100	110
31	272	.....	a 656	325	.....	a1,625	.....	688	.....	202	81	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1912–13.												
1	113	188	a295	670	512	679	1,593	754	a765	184	114	a114
2	118	206	299	806	a507	a740	1,463	744	756	180	113	121
3	116	a223	304	877	502	802	1,306	790	738	175	a72	113
4	118	239	289	962	438	889	1,167	a702	673	a166	31	112
5	121	240	288	a860	429	834	1,015	614	593	a157	126	118
6	a115	238	307	758	411	771	a1,072	570	517	a147	162	a124
7	109	237	299	751	388	708	1,128	552	596	138	161	124
8	116	270	a308	787	415	721	1,046	519	a507	116	161	123
9	116	283	317	765	a385	a674	988	477	418	110	160	124
10	122	a304	317	678	354	626	923	478	377	100	a89	118
11	122	325	316	591	367	654	845	a439	354	100	18	112
12	a119	317	295	a648	334	642	863	399	359	111	18	112
13	a115	300	290	706	344	596	a1,070	393	350	a111	51	112
14	112	287	272	696	318	604	1,277	380	327	111	126	a115
15	109	286	a281	694	317	652	1,333	346	a323	100	97	117
16	110	309	291	706	a320	a764	1,433	345	319	106	58	99
17	116	a311	262	669	324	875	1,582	347	289	96	a58	92
18	110	312	246	655	314	818	1,537	a347	280	100	59	99
19	110	298	272	a650	318	764	a1,497	346	218	95	86	118
20	a109	292	305	645	315	836	a1,456	346	233	a91	114	87
21	109	281	327	597	316	904	1,416	335	239	87	114	a117
22	25	261	a327	647	a375	976	1,319	316	a249	80	58	147
23	25	257	326	653	a433	a980	1,234	328	259	80	58	188
24	45	a266	321	627	492	984	1,180	397	251	80	a86	223
25	114	274	a319	595	501	929	1,097	a527	217	87	114	255
26	257	286	317	a607	512	944	1,009	656	229	87	113	255
27	a265	286	339	620	522	1,034	a966	694	219	a53	113	247
28	272	a291	478	575	603	1,285	923	728	220	18	85	a243
29	248	297	a487	536	.....	1,347	845	790	a210	19	85	239
30	248	292	496	530	.....	a1,475	822	a782	201	44	a95	220
31	237	.....	597	522	.....	1,603	.....	a773	.....	82	105	.....
1913–14.												
1	210	352	340	514	a1,050	a634	1,201	1,064	328	174	150	184
2	214	a350	360	402	1,334	922	1,081	1,064	331	175	a137	183
3	222	348	361	409	1,319	1,515	1,202	a1,055	290	225	123	184
4	218	349	362	a399	1,301	1,887	1,149	1,046	298	a229	138	161
5	a222	347	368	389	1,221	2,411	a1,232	972	266	a232	165	161
6	226	344	370	366	1,106	2,327	1,314	1,022	263	236	165	a161
7	219	344	a414	366	966	2,099	1,234	1,069	a285	253	164	a162
8	214	341	457	372	a928	a1,812	1,311	1,018	307	258	165	162
9	219	a337	443	364	889	1,525	1,376	1,056	307	258	a177	162
10	214	333	457	373	910	1,139	1,390	a1,082	282	257	190	169
11	219	338	500	a362	830	1,180	1,341	1,108	262	258	188	107
12	a220	341	487	352	720	1,257	a1,298	1,030	261	a257	148	85
13	a221	338	491	248	615	1,204	1,254	971	257	256	137	a105
14	222	342	a464	242	597	1,344	1,107	1,048	a253	256	176	125
15	219	342	436	287	a486	a1,205	1,022	1,023	248	214	189	111
16	219	a340	415	346	374	1,066	1,035	967	237	214	a189	111
17	234	338	391	335	343	1,004	1,047	a965	217	215	189	110
18	234	330	371	a323	414	969	1,107	962	217	213	149	111
19	a247	323	354	310	338	951	a1,068	904	191	a213	80	111
20	259	327	355	312	398	898	a1,028	849	191	212	80	a111
21	320	326	a350	290	327	798	989	786	a201	200	90	111
22	314	327	345	286	a338	a831	906	761	211	161	189	111
23	311	a327	347	265	a348	865	823	777	213	94	a208	111
24	315	327	387	314	359	777	783	a659	212	101	227	85
25	336	326	a480	a395	340	650	768	541	175	106	215	62
26	a344	341	574	476	352	588	a859	448	132	a124	218	61
27	352	a326	574	578	375	621	950	464	111	142	208	a61
28	352	310	a569	668	345	708	1,006	421	a128	169	184	62
29	349	318	564	738	.....	a994	1,017	400	145	134	192	62
30	352	a329	597	731	.....	1,280	1,035	a376	175	80	a195	62
31	355	.....	569	766	.....	1,280	.....	a352	.....	103	199	.....

a Discharge interpolated.

Daily discharge, in second-feet, of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Day.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.
1914-15.												
1	62	a 112	214	191	653	1,328	262	244	187	134	a 348	333
2	62	111	214	192	566	1,273	261	a 251	182	258	336	328
3	62	111	215	a 225	487	1,170	261	259	183	350	341	300
4	a 62	113	215	258	391	1,071	a 260	329	137	a 400	389	332
5	62	113	216	236	377	999	259	338	131	a 449	502	a 315
6	62	112	a 215	178	472	891	298	290	a 135	499	681	a 298
7	62	112	215	257	a 534	a 800	299	305	138	518	787	281
8	62	a 112	200	343	596	708	296	251	138	514	a 984	214
9	62	113	187	295	669	675	296	a 280	138	533	1,180	216
10	61	113	187	a 313	663	614	194	308	118	784	1,197	217
11	a 61	112	186	331	679	552	a 283	308	106	a 782	1,186	217
12	a 62	112	187	350	684	509	372	308	106	779	1,092	a 217
13	62	113	a 205	585	734	462	327	257	a 106	722	1,064	217
14	62	113	224	695	a 737	a 462	353	257	106	670	1,007	190
15	62	a 152	246	772	740	461	341	245	106	613	a 940	163
16	61	190	263	831	965	410	328	a 243	69	676	874	164
17	61	190	264	a 818	1,154	361	327	242	63	635	772	163
18	a 74	190	277	805	1,127	326	a 315	227	56	a 584	694	163
19	87	190	282	1,026	1,274	337	a 303	217	65	532	620	a 150
20	125	190	a 268	1,370	1,375	326	291	207	a 67	509	547	138
21	177	190	253	1,482	a1,266	a 299	297	228	70	465	521	138
22	150	a 189	253	1,468	a1,156	271	305	186	70	438	a 496	177
23	111	189	251	1,440	1,047	294	295	a 212	101	393	470	190
24	101	215	225	a1,377	1,000	267	288	237	69	324	433	190
25	a 107	215	a 215	1,314	1,070	274	a 290	237	69	a 353	413	190
26	112	a 215	a 205	1,240	1,152	283	291	232	70	382	420	a 190
27	112	215	a 196	1,164	1,176	288	285	233	a 91	322	376	190
28	112	156	186	1,095	a1,252	a 288	258	212	112	305	354	190
29	113	a 186	137	990	.....	288	242	184	112	305	a 346	190
30	113	215	138	990	.....	278	238	a 185	111	269	338	191
31	112	.....	162	a 882	.....	260	.....	a 186	.....	360	340	.....

a Discharge interpolated.

Monthly discharge of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915.

Month.	Discharge in second-feet.			Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.		Maximum.	Minimum.	Mean.
1901.				1902-3.			
January	365	259	295	October	530	272	333
February	279	115	199	November	791	276	363
March	1,709	193	907	December	1,204	253	652
April	3,062	1,182	1,878	January	1,159	484	774
May	2,084	936	1,444	February	1,277	682	971
June	2,030	262	761	March	1,837	1,116	1,456
July	371	194	256	April	1,718	604	1,256
August	390	204	308	May	529	227	336
September	361	207	255	June	2,521	209	890
				July	1,460	297	554
1901-2.				August	334	141	255
October	517	233	318	September	214	136	177
November	558	246	317				
December	1,770	215	797	The year.	2,521	136	665
January	1,868	475	951				
February	841	212	509	1903-4.			
March	4,148	1,170	2,147	October	459	99	274
April	1,656	534	1,002	November	394	238	301
May	670	270	448	December	433	234	323
June	347	188	238	January	309	187	235
July	243	74	160	February	468	196	263
August	316	110	199	March	1,490	420	982
September	252	99	182	April	1,959	478	1,038
				May	2,861	354	1,085
The year.	4,148	74	608	June	403	198	309
				July	342	106	226

Monthly discharge of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.
1903–4—Contd.			
August	279	185	230
September	478	27	234
The year.	2,861	27	459
1904–5.			
October	282	154	226
November	343	163	242
December	357	82	134
January	1,082	283	545
February	287	184	236
March	2,027	178	854
April	1,792	353	817
May	349	165	301
June	452	111	268
July	268	92	165
August	206	57	149
September	1,266	58	560
The year.	2,027	57	375
1905–6.			
October	318	181	251
November	351	160	246
December	550	269	396
January	662	402	547
February	1,023	291	474
March	1,666	554	1,011
April	1,746	669	1,252
May	1,196	262	456
June	1,285	335	636
July	513	288	364
August	468	199	322
September	227	27	138
The year.	1,746	27	507
1906–7.			
October	296	68	174
November	465	238	343
December	314	239	278
January	1,481	339	689
February	383	306	352
March	1,358	293	717
April	906	520	675
May	473	316	402
June	530	164	350
July	260	118	176
August	125	11	77
September	558	81	225
The year.	1,481	11	371
1907–8.			
October	752	318	500
November	1,261	483	873
December	1,226	627	901
January	1,436	550	1,091
February	1,291	366	742
March	1,319	789	1,092
April	1,112	394	760
May	831	374	535
June	602	119	296
July	189	83	111
August	319	100	201
September	188	25	92
The year.	1,436	25	600
1908–9.			
October	252	24	78
November	228	164	205
December	332	165	218
January	318	120	249
February	1,809	164	804
March	1,682	403	826
April	1,056	503	829
May	1,215	358	618
June	514	164	342
July	164	45	116
August	103	43	80
September	234	23	103
The year.	1,809	23	369
1909–10.			
October	235	101	156
November	336	120	208
December	346	187	269
January	1,420	163	624
February	1,251	501	727
March	2,577	524	1,391
April	602	369	446
May	577	222	360
June	467	232	343
July	294	87	156
August	113	64	88
September	101	25	56
The year.	2,577	25	399
1910–11.			
October	163	15	58
November	269	44	200
December	395	88	192
January	422	150	280
February	403	214	298
March	770	280	493
April	928	423	671
May	402	176	263
June	268	92	205
July	164	16	38
August	184	80	116
September	186	83	126
The year.	928	16	244
1911–12.			
October	334	119	223
November	526	238	364
December	776	320	480
January	604	306	384
February	1,207	184	453
March	2,399	596	1,392
April	1,750	732	1,242
May	888	562	739
June	733	192	401
July	238	69	156
August	203	81	138
September	140	80	115
The year.	2,399	80	507
1912–13.			
October	272	25	134
November	325	188	275
December	597	246	329
January	962	522	680
February	603	314	406
March	1,603	596	875
April	1,593	822	1,180
May	790	316	523
June	765	201	376
July	184	18	104
August	162	18	94
September	255	87	146
The year.	1,603	18	426

Monthly discharge of Concord River at Lowell, Mass., for the years ending Sept. 30, 1901–1915—Continued.

Month.	Discharge in second-feet.			Month.	Discharge in second-feet.		
	Maximum.	Minimum.	Mean.		Maximum.	Minimum.	Mean.
1913–14.				1914–15.			
October	355	210	264	October	177	61	86
November	352	310	335	November	215	111	155
December	597	340	437	December	282	137	216
January	766	242	406	January	1,482	178	758
February	1,334	327	676	February	1,375	377	857
March	2,411	621	1,185	March	1,328	260	543
April	1,390	768	1,098	April	372	194	291
May	1,108	352	847	May	338	184	248
June	331	111	233	June	187	56	107
July	258	80	194	July	784	134	479
August	227	80	169	August	1,197	336	647
September	184	61	119	September	333	138	215
The year	2,411	61	496	The year	1,482	56	382

NOTE.—Run-off in second-feet per square mile not computed on account of uncertainty in regard to amount of waste water received from Sudbury River basin.

Days of deficiency in discharge of Concord River at Lowell, Mass., during the years ending Sept. 30, 1901–1915.

Discharge in second-feet.	Days of deficiency in discharge.														
	1901 [a]	1901–2	1902–3	1903–4	1904–5	1905–6	1906–7	1907–8	1908–9	1909–10	1910–11	1911–12	1912–13	1913–14	1914–15
50	.....	.....	.....	4	.....	1	5	12	21	16	41	.....	9	.....	.....
100	.....	4	.....	8	22	10	26	32	65	50	82	11	38	13	30
150	7	25	11	24	53	12	50	66	110	94	133	64	100	41	75
200	15	71	25	51	124	40	96	89	148	130	171	110	111	76	121
250	64	113	56	137	174	70	135	98	194	169	228	128	136	121	164
300	126	170	90	179	218	112	158	107	223	204	269	151	173	144	215
350	151	191	152	224	266	165	216	115	236	230	295	197	216	199	249
400	171	208	186	259	283	188	255	132	253	249	312	216	229	233	263
500	174	228	203	288	298	240	296	159	276	286	324	237	242	252	279
600	177	249	214	292	309	281	316	193	288	308	333	259	265	264	294
700	181	268	230	303	319	298	327	218	301	318	348	270	291	270	309
800	182	276	246	308	324	309	333	243	315	327	357	296	314	282	320
900	187	288	257	312	330	315	339	269	329	330	363	312	327	290	327
1,000	193	300	269	321	334	323	348	289	342	333	365	320	338	306	333
1,250	213	321	313	341	348	340	360	348	354	342	.....	337	349	344	353
1,500	230	329	336	358	357	354	365	366	358	352	.....	343	361	358	365
2,000	257	347	360	361	364	365	.....	.....	365	356	.....	360	365	362	.....
2,500	268	358	363	364	365	.....	.....	.....	.....	363	.....	366	.....	365	.....
3,000	272	361	365	366	.....	.....	.....	.....	.....	365	.....	.....	.....	.....	.....
4,000	273	364	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
5,000	.....	365	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

[a] Jan. 1 to Sept. 30, 1901.

NOTE.—The above table shows the number of days on which the discharge was less than the amounts given in the column for discharge. In using this table, allowance should be made for the varoius losses, the principal ones being the wheel loss, which may be as large as 20 per cent, and the head loss, which may be as large as 5 per cent.

SUDBURY RIVER AND LAKE COCHITUATE BASINS NEAR FRAMINGHAM AND COCHITUATE, MASS.

DRAINAGE AREA.—The areas of Sudbury River and Lake Cochituate basins have been artificially changed at times in connection with changes in the water-supply systems of the Metropolitan district. Area of Sudbury basin from 1875 to 1878, inclusive, 77.8 square miles; 1879–1880, 78.2 square miles; 1881–1915, 75.2 square miles; area of Cochituate basin from 1863 to 1909, inclusive, 18.87 square miles; 1910, 17.8 square miles; 1911–1915, 17.58 square miles.

RECORDS AVAILABLE.—Sudbury River basin, January, 1875, to September, 1915; Lake Cochituate basin, January, 1863, to September, 1915. Sudbury River and Lake Cochituate have been studied by the engineers of the city of Boston, the State Board of Health of Massachusetts, and the Metropolitan Water and Sewerage Board; records of rainfall have been kept in the Sudbury basin since 1875 and in the Cochituate basin since 1852, but Cochituate records prior to 1872 are of doubtful accuracy.

REGULATION.—The greater part of the flow from these basins is controlled by storage reservoirs constructed by the city of Boston and the Metropolitan Water and Sewerage Board. Lake Cochituate, which drains into Sudbury River a short distance below Framingham, is controlled as a storage reservoir by the Metropolitan Waterworks. In the Sudbury River basin the water surfaces exposed to evaporation have been increased from time to time by the construction of additional storage reservoirs. From 1875 to 1878, inclusive, the water surface amounted to 1.9 per cent of the total area; from 1879 to 1884, to 3 per cent; 1885 3.4 per cent; 1894 to 1897, to 3.9 per cent; 1898 and subsequent years, 6.5 per cent.

DETERMINATION OF DISCHARGE.—In determining the run-off of the Sudbury and Cochituate drainage basins the water diverted for the municipal supply of Framingham, Natick, and Westboro, which discharge their sewerage outside the basins, is taken into consideration; the results, however, are probably less accurate since the sewerage diversion works were constructed. The public water and sewerage works were installed in these towns as follows:

Dates of installation of water and sewerage works in Framingham, Natick, and Westboro.

Town.	Water supply.	Sewerage works.
Framingham	1885	1889
Natick	1874	1896
Westboro	1879	1892

Water from the Wachusett drainage basin passes into the reservoirs in the Sudbury basin and must be measured to determine the yield of the Sudbury basin; the accuracy of the estimates of the Sudbury water supply during months of low yield in years subsequent to 1897 is impaired by the errors unavoidable in the measurement of the larger quantities of water from the Wachusett basin.

COOPERATION.—Complete records for calendar years furnished by the Metropolitan Water and Sewerage Board of Boston; changed to the climatic year by engineers of the Geological Survey.

Yield, in second-feet per square mile, of Sudbury River basin,[a] near Framingham, Mass., for the years ending Sept. 30, 1875–1915.

Year.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Mean.
1874–75	.....	.....	.....	0.159	2.315	2.482	4.718	1.838	1.346	0.497	0.612	0.321	.....
1875–76	1.000	2.015	0.903	.995	2.116	6.862	5.094	1.761	.343	.283	.627	.285	1.859
1876–77	.361	1.683	.702	1.019	1.469	7.448	3.703	2.153	.924	.312	.187	.092	1.673
1877–78	.977	2.193	1.995	2.800	3.814	5.426	2.516	2.158	.782	.199	.736	.249	1.978
1878–79	.799	2.619	4.916	1.083	2.647	3.605	4.821	1.723	.640	.243	.611	.218	1.988
1879–80	.109	.318	.716	1.733	2.765	2.126	1.808	.796	.271	.273	.184	.124	.928
1880–81	.157	.318	.271	.642	2.392	6.195	2.392	1.493	2.070	.428	.229	.305	1.401
1881–82	.287	.611	1.199	1.920	3.718	4.392	1.342	1.998	.818	.133	.086	.474	1.403
1882–83	.463	.324	.487	.518	1.598	2.492	2.088	1.450	.464	.178	.122	.141	.856
1883–84	.288	.317	.299	1.540	4.397	5.857	4.415	1.594	.644	.346	.397	.068	1.668
1884–85	.129	.271	1.431	1.910	2.095	2.433	2.808	2.067	.659	.096	.372	.187	1.200
1885–86	.519	1.822	1.816	2.260	7.428	3.185	3.013	1.114	.314	.179	.146	.182	1.791
1886–87	.225	1.041	1.578	4.006	4.377	4.437	4.053	1.561	.640	.178	.331	.172	1.867
1887–88	.294	.570	.995	1.629	3.011	5.009	4.093	2.526	.652	.182	.587	1.786	1.771
1888–89	3.093	4.267	4.708	4.305	1.850	2.071	2.182	1.361	1.011	.980	2.216	1.274	2.451
1889–90	1.903	3.003	3.467	1.941	2.366	5.636	2.900	2.114	.878	.166	.204	.708	2.108
1890–91	3.515	1.879	1.541	4.669	5.393	6.891	3.709	.901	.639	.231	.252	.314	2.480
1891–92	.325	.472	.842	2.893	1.459	3.025	1.348	1.947	.662	.331	.433	.355	1.178
1892–93	.195	1.079	.750	.671	2.386	5.021	3.288	4.461	.680	.244	.280	.167	1.571
1893–94	.343	.493	1.252	1.072	1.533	3.463	2.538	1.299	.648	.249	.324	.231	1.119
1894–95	.579	1.293	1.108	1.600	.837	3.728	3.892	.984	.269	.357	.354	.138	1.264
1895–96	2.134	4.296	2.757	1.677	4.140	5.933	2.312	.557	.617	.147	.088	.600	2.095
1896–97	.916	1.020	1.017	1.307	1.651	3.968	2.344	1.416	1.488	1.018	.914	.282	1.447
1897–98	.145	1.407	2.451	2.535	4.676	4.029	2.830	1.927	.820	.357	1.712	.571	1.939
1898–99	1.795	3.073	2.783	3.541	2.137	6.507	3.900	.790	.102	.030	−.054	.145	2.065
1899–1900	.179	.474	.340	1.229	5.880	5.653	2.088	2.031	.489	−.028	−.052	.101	1.504
1900–1901	.287	1.026	1.696	.676	.464	4.262	6.504	4.570	1.165	.473	.655	.473	1.861
1901–2	.637	.734	4.170	2.728	2.590	6.497	2.916	1.149	.469	.101	.208	.276	1.876
1902–3	.782	.688	2.753	2.685	3.526	5.344	3.498	.542	3.075	.689	.475	.201	2.011
1903–4	.761	.561	.901	.738	1.365	4.640	5.096	2.699	.648	.096	.262	.614	1.530
1904–5	.295	.447	.417	2.182	.510	3.864	2.543	.460	.723	.275	.177	1.928	1.154
1905–6	.245	.431	1.373	1.745	1.610	3.727	3.015	1.639	1.093	.615	.279	.030	1.317
1906–7	.466	.747	1.019	2.091	.965	2.565	2.487	1.374	1.178	.014	−.161	.837	1.132
1907–8	1.146	3.092	3.143	2.978	2.377	3.492	1.729	1.618	.301	−.022	.157	−.127	1.658
1908–9	.072	.110	.210	.607	3.537	2.683	2.662	1.553	.370	−.187	−.069	.231	.963
1909–10	−.079	.127	.407	2.305	2.861	3.023	1.031	.429	.799	−.158	−.113	.008	.875
1910–11	−.078	.273	.342	.802	1.084	1.771	2.206	.492	.329	−.022	.032	.117	.607
1911–12	.458	.918	1.405	1.127	1.852	4.783	3.459	2.238	.229	−.119	−.046	−.044	1.355
1912–13	−.021	.255	.765	1.611	1.166	3.233	3.453	1.342	.230	−.096	−.083	.136	.998
1913–14	.749	.743	1.132	1.405	1.561	4.686	3.640	2.398	.007	.165	.241	−.210	1.379
1914–15	−.091	.151	.387	2.520	2.893	.918	.912	.395	.156	1.617	1.808	.059	.968

[a] See statement in station description.

Summary of yield and rainfall in Sudbury River basin near Framingham, Mass., for the years ending Sept. 30, 1876–1915.

[Drainage area,[a] 75.2 square miles.]

Month.	Yield.				Average rainfall in inches.
	Total in million gallons.	Per square mile.		Average depth in inches on drainage area.	Per cent of rainfall.	
		Million gallons per day.	Second-feet.			
1876–1915.						
October	39,711.9	0.426	0.659	0.760	19.7	3.86
November	68,760.6	.762	1.179	1.315	34.7	3.79
December	91,040.0	.976	1.510	1.741	45.7	3.81
January	114,048.8	1.223	1.892	2.181	52.4	4.16
February	143,355.2	1.687	2.610	2.740	66.4	4.13
March	257,468.6	2.761	4.272	4.925	113.8	4.32
April	175,882.2	1.949	3.016	3.365	95.4	3.53
May	98,052.9	1.052	1.628	1.877	57.4	3.27
June	41,261.7	.457	.707	.789	27.2	2.90
July	15,900.1	.172	.266	.307	8.4	3.65
August	22,763.7	.244	.378	.436	11.1	3.91
September	19,973.1	.221	.342	.382	11.5	3.33
The year	1,088,218.8	.991	1.533	20.818	46.6	44.66

[a] Although the drainage area has been changed at different times, figures in this table have been computed from the present drainage area.

Yield, in second-feet per square mile, of Lake Cochituate basin,[a] near Cochituate, Mass., for the years ending Sept. 30, 1863–1915.

Year.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Mean.
1863	.....	.....	.....	1.661	2.992	3.221	3.955	1.252	0.595	2.553	1.334	0.886	.....
1863–64	1.135	2.365	1.899	2.088	1.445	3.550	2.374	1.400	.436	.357	.585	.440	1.508
1864–65	1.228	1.112	1.020	1.784	1.690	4.041	2.421	4.121	.298	.396	.414	.397	1.582
1865–66	.603	.917	.983	.641	2.726	1.544	1.452	1.123	.974	1.092	.554	1.181	1.136
1866–67	.813	.872	1.346	.951	5.028	3.014	2.567	1.891	.594	.486	1.820	.279	1.617
1867–68	.912	.991	.975	1.072	1.035	3.339	3.131	5.358	1.430	.395	.985	1.633	1.775
1868–69	.822	1.781	1.017	1.581	1.791	2.888	2.227	1.882	.939	.642	.513	.995	1.419
1869–70	2.024	1.167	2.743	4.107	3.790	2.926	6.152	1.440	.870	.464	.347	.575	2.204
1870–71	.831	.716	.677	.892	2.195	2.199	1.412	1.733	.782	.373	.604	.255	1.049
1871–72	.532	1.105	1.025	.957	.827	1.172	2.655	.951	1.331	.124	1.146	1.522	1.108
1872–73	1.462	1.791	1.048	2.682	1.511	3.378	5.458	2.311	.406	.535	1.215	.700	1.875
1873–74	1.768	1.663	2.328	2.709	2.104	1.597	2.859	2.410	1.753	.821	.800	.477	1.772
1874–75	.454	.521	.441	.115	2.807	2.308	2.823	1.209	1.327	.220	.538	.534	1.092
1875–76	1.037	1.760	1.058	.942	1.656	4.507	3.766	1.236	.453	.735	.254	.519	1.491
1876–77	.313	1.664	.855	1.040	1.318	5.907	2.907	1.765	.823	.560	.568	.362	1.509
1877–78	.973	2.414	1.704	2.816	3.813	4.684	2.559	1.439	.693	.406	.725	.259	1.862
1878–79	.637	1.854	3.501	1.118	2.234	2.860	4.019	1.218	.689	.283	.820	.546	1.642
1879–80	.519	.647	.904	1.276	2.078	1.553	1.405	.382	.051	.283	.202	.217	.788
1880–81	.240	.594	.512	1.035	2.140	4.905	1.607	1.093	1.170	.139	.074	.206	1.137
1881–82	.159	.753	1.220	1.595	2.885	3.185	.836	1.345	.556	.052	.062	.865	1.116
1882–83	.731	.520	.796	.730	1.526	1.769	1.487	1.091	.060	.015	.063	.392	.760
1883–84	.381	.359	.813	1.593	2.656	4.053	3.581	1.203	.603	.227	.530	.120	1.338
1884–85	.294	.557	1.575	1.645	1.919	1.916	2.114	1.401	.383	.000	.291	.227	1.022
1885–86	.684	1.838	1.422	1.980	7.615	3.046	2.261	.943	.172	.217	.117	.266	1.670
1886–87	.360	1.075	1.817	3.524	4.168	4.080	3.011	1.171	.735	.625	1.149	.574	1.844
1887–88	.428	.622	.835	.984	2.568	4.129	3.090	2.056	.478	.407	.815	2.072	1.534
1888–89	2.229	3.775	4.732	3.905	1.778	1.809	1.947	1.038	1.055	1.413	2.973	1.604	2.362
1889–90	1.655	2.642	2.830	1.665	1.955	5.092	1.999	1.608	1.261	.284	.402	1.255	1.888
1890–91	2.953	1.333	1.833	5.428	6.360	6.965	3.865	.764	.690	.432	.626	.682	2.669
1891–92	.681	.743	1.093	2.628	1.446	2.618	.808	1.758	.442	.286	.483	.543	1.131
1892–93	.495	.977	.728	.555	2.450	3.577	2.177	1.585	.671	.330	.669	.378	1.208
1893–94	.923	.749	1.283	1.053	1.607	2.210	1.927	.789	.403	.325	.359	.407	.999
1894–95	.571	.827	.992	1.368	.721	3.032	2.997	.841	.364	.486	.429	.621	1.106
1895–96	1.711	3.145	2.083	1.494	3.419	4.791	1.805	.541	.639	.325	.410	.923	1.766
1896–97	1.113	1.250	1.131	1.421	1.588	2.792	1.659	1.207	1.067	.653	.542	.410	1.235
1897–98	.375	1.510	1.870	1.971	3.894	2.700	2.414	1.615	.700	.321	1.129	.278	1.549
1898–99	1.393	2.073	2.377	2.991	2.223	5.505	2.545	.599	.102	.028	.079	.449	1.697
1899–1900	.543	.446	.352	1.060	4.136	4.020	1.454	1.641	.455	.293	.558	.640	1.283
1900–1901	.689	1.087	1.502	.840	.629	3.845	4.649	3.704	1.019	.792	1.101	1.012	1.746
1901–2	1.083	1.034	3.675	2.071	1.934	6.022	2.741	.955	.319	.398	.604	.688	1.709
1902–3	.814	.710	2.052	2.184	2.734	4.311	3.106	.689	2.132	.553	.408	.130	1.644
1903–4	.886	.534	.815	.910	1.167	4.108	4.695	2.032	.489	.059	.398	.901	1.420
1904–5	.364	.758	.698	1.824	.422	3.127	2.064	.531	.643	.180	.571	1.647	1.073
1905–6	.685	.878	1.398	1.363	1.226	3.017	2.388	1.395	.772	.640	.490	.429	1.225
1906–7	.738	.722	.705	1.645	.903	2.061	1.964	1.238	.902	.108	.252	.952	1.016
1907–8	.988	2.361	2.492	2.049	2.412	2.946	1.525	1.331	.315	.245	.184	−.030	1.401
1908–9	.108	.123	.387	.633	3.191	2.125	2.145	1.218	.598	.181	.432	.658	.967
1909–10	.142	.373	.558	2.424	2.807	2.412	1.147	.603	1.024	.252	.013	.101	.982
1910–11	.035	.379	.506	.768	1.173	1.736	1.943	.251	.116	.052	.487	.549	.663
1911–12	.786	1.068	1.557	.981	1.783	4.262	3.025	2.245	.417	.062	.118	.351	1.388
1912–13	.425	.516	.953	1.685	1.278	3.126	3.059	1.429	.376	−.011	.284	.491	1.137
1913–14	.863	.757	1.329	1.566	1.629	4.831	3.392	2.208	.216	.276	.208	−.148	1.430
1914–15	.030	.301	.543	2.874	3.408	.992	.899	.351	.141	1.623	1.605	.150	1.066

[a] See statement in station description.

Summary of yield and rainfall in Lake Cochituate basin near Cochituate, Mass., for the years ending Sept. 30, 1864–1915.

[Drainage area, [a] 17.58 square miles.]

Month.	Yield.					Average rainfall in inches.
	Total in million gallons.	Per square mile.		Average depth in inches on drainage area.	Per cent of rainfall.	
		Million gallons per day.	Second-feet.			
1864–1915.						
October	15,009.3	0.530	0.819	0.95	23.1	4.09
November	20,707.9	.755	1.171	1.30	32.8	3.97
December	25,707.7	.907	1.407	1.62	45.3	3.57
January	31,422.3	1.109	1.716	1.98	50.4	3.93
February	39,003.1	1.511	2.238	2.45	62.8	3.91
March	60,787.5	2.145	3.319	3.83	89.3	4.29
April	45,181.7	1.647	2.548	2.84	81.9	3.47
May	26,889.0	.949	1.468	1.69	47.2	3.58
June	12,042.9	.439	.679	.76	25.7	2.96
July	7,199.2	.254	.393	.45	11.9	3.77
August	10,920.2	.385	.596	.69	16.7	4.14
September	10,799.7	.394	.610	.68	19.1	3.55
The year	305,670.5	.915	1.416	19.24	42.6	45.23

[a] Used as a basis of computations in table. See "Drainage area" in station description. Figures in summary represent average quantities.

MISCELLANEOUS MEASUREMENTS.

The results of discharge measurements of streams in Massachusetts at points other than regular gaging stations are presented in the following list:

Miscellaneous measurements on streams in Massachusetts.

Connecticut River basin.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
1914.				*Feet.*	*Sec.-ft.*
July 24	Canal		Erving		[a] 145
1906.					
Oct. 18	Ware River	Chicopee River	Bridge at Barre station		104
1910.					
July 22	do	do	do		102
22	do	do	do		368
Sept. 13	do	do	do		7.3
1911.					
Mar. 8	do	do	do		232
1909.					
Aug. 6	Swift River	do	Three-fourths mile below Enfield.		89.7
6	Middle Branch of Swift River.	Swift River	1½ miles from Enfield		24.0
1906.					
Oct. 19	Quaboag River	Chicopee River	Highway bridge near Palmer		110
1909.					
Aug. 4	Middle Branch of Westfield River.	Westfield River	Mouth		[b] 5.0
26	do	do	Bridge ¼ mile above mouth		15
Oct. 11	do	do	do		6.9

[a] Water diverted from Millers River and used by two wheels in chair factory. [b] Estimated.

Miscellaneous measurements on streams in Massachusetts—Continued.

Connecticut River basin—Continued.

Date.	Stream.	Tributary to—	Locality.	Gage height.	Discharge.
1909.				*Feet.*	*Sec.-ft.*
Aug. 4	West Branch of Westfield River.	Westfield River	One-half mile above Huntington.		34.5
Oct. 11	do	do	Highway bridge at Huntington.		23.8
1910.					
Sept. 8	do	do	do		69.1
1914.					
July 21	Westfield Little River.	do	Highway bridge near Westfield.		5.5
22	Great Brook	do	Town of Little River	1.00	25.6
Aug. 19	do	do	do	.97	20.9

Quinebaug River basin.

1913					
Sept. 3	French River	Quinebaug River	Dam at Perryville	3.83	100
3	do	do	do	3.73	59

Rating of wheels of Ludlow Manufacturing Associates plant on Chicopee River at Red Bridge, Mass., during 1913–14.

[Made by C. H. Pierce.]

Date.	Gage height.		Discharge.	Wheel-gate openings.
	Pond gage.	Tailrace gage.		
1913.	*Feet.*	*Feet.*	*Sec.-ft.*	
Oct. 2	23.4	−25.8	383	1.00 opening on unit No. 1.
2	23.8	−26.1	285	.605 opening on unit No. 1.
3	24.2	−26.1	227	.43 opening on unit No. 1.
3	24.4	−26.2	248	.70 opening on unit No. 4.
3	24.7	−26.0	336	.85 opening on unit No. 4.
3	24.8	−25.8	408	1.00 opening on unit No. 4.
4	25.1	−26.0	206	.58 opening on unit No. 4.
4	25.2	−26.1	156	.26 opening on unit No. 1.
4	25.1	−26.5	74	.575 opening on unit No. 5.
5	24.6	−26.9	28	Gates all closed.
1914.				
Aug. 27	24.0	−26.1	252	0.74 opening on unit No. 4.
27	24.1	−26.1	255	.52 opening on unit No. 3.
27	24.2	−26.1	289	.64 opening on unit No. 2.
28	24.5	−25.7	412	1.00 opening on unit No. 4.
28	24.5	−26.0	330	.90 opening on unit No. 4.
28	24.6	−26.6	72	.38 opening on unit No. 5.
28	24.6	−26.3	376	1.00 opening on unit No. 3.
28	24.6	−25.9	396	1.00 opening on unit No. 2.
28	24.8	−26.2	199	.61 opening on unit No. 4.
29	25.1	−26.7	74	.91 opening on unit No. 5.
29	25.1	−26.6	69	.5+ opening on unit No. 5.
29	25.2	−26.0	125	.37 opening on unit No. 4.
30	25.2	−26.0	114	.15 opening on unit No. 1.
30	.....	.....	[a] 169	Flow over dam and wasteway.

[a] Head on dam 0.26 foot.

NOTE.—These measurements were made at the Ludlow Manufacturing Associates power plant. Units Nos. 1, 2, and 3 are identical in construction and consist of two 36-inch wheels set tandem on horizontal shafts direct connected to 1,000-kilowatt generators of the General Electric Co. class 20, 1,000 kilowatts, 240 revolutions per minute type; wheel gates of piston type. Unit No. 4 is of similar construction except that the generator is of larger capacity, being of the General Electric Co. class 16, 1,200 kilowatts, 300 revolutions per minute type, and the wheel gates of swing type. Unit No. 5 consists of two 15-inch wheels set tandem.

CONVENIENT EQUIVALENTS.

The following is a list of convenient equivalents for use in hydraulic computations:

Table for converting discharge in second-feet per square mile into run-off in depth in inches over the area.

Discharge (second-feet per square mile).	Run-off (depth in inches).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.03719	1.041	1.079	1.116	1.153
2	.07438	2.083	2.157	2.231	2.306
3	.11157	3.124	3.236	3.347	3.459
4	.14876	4.165	4.314	4.463	4.612
5	.18595	5.207	5.393	5.578	5.764
6	.22314	6.248	6.471	6.694	6.917
7	.26033	7.289	7.550	7.810	8.070
8	.29752	8.331	8.628	8.926	9.223
9	.33471	9.372	9.707	10.041	10.376

NOTE.—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in millions of cubic feet.

Discharge (second-feet).	Run-off (millions of cubic feet).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.0864	2.419	2.506	2.592	2.678
2	.1728	4.838	5.012	5.184	5.356
3	.2592	7.257	7.518	7.776	8.034
4	.3456	9.676	10.02	10.37	10.71
5	.4320	12.10	12.53	12.96	13.39
6	.5184	14.51	15.04	15.55	16.07
7	.6048	16.93	17.54	18.14	18.75
8	.6912	19.35	20.05	20.74	21.42
9	.7776	21.77	22.55	23.33	24.10

NOTE.—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting discharge in second-feet into run-off in millions of gallons.

Discharge (second-feet).	Run-off (millions of gallons).				
	1 day.	28 days.	29 days.	30 days.	31 days.
1	0.6463	18.10	18.74	19.39	20.04
2	1.293	36.20	37.48	38.78	40.08
3	1.939	54.30	56.22	58.17	60.12
4	2.585	72.40	74.96	77.56	80.16
5	3.232	90.50	93.70	96.95	100.2
6	3.878	108.6	112.4	116.3	120.2
7	4.524	126.7	131.2	135.7	140.3
8	5.171	144.8	149.9	155.1	160.3
9	5.817	162.9	168.7	174.5	180.4

NOTE.—For part of a month multiply the run-off for 1 day by the number of days.

Table for converting velocity in feet per second into velocity in miles per hour.

[1 foot per second=0.681818 mile per hour, or two-thirds mile per hour, very nearly; 1 mile per hour=1.4666 feet per second. In computing the table the values 0.68182 and 1.4667 were used.]

Feet per second (units).	Miles per hour for tenths of foot per second.									
	0	1	2	3	4	5	6	7	8	9
0	0.000	0.068	0.136	0.205	0.273	0.341	0.409	0.477	0.545	0.614
1	.682	.750	.818	.886	.995	1.02	1.09	1.16	1.23	1.30
2	1.36	1.43	1.50	1.57	1.64	1.70	1.77	1.84	1.91	1.98
3	2.05	2.11	2.18	2.25	2.32	2.39	2.45	2.52	2.59	2.66
4	2.73	2.80	2.86	2.93	3.00	3.07	3.14	3.20	3.27	3.34
5	3.41	3.48	3.55	3.61	3.68	3.75	3.82	3.89	3.95	4.02
6	4.09	4.16	4.23	4.30	4.36	4.43	4.50	4.57	4.64	4.70
7	4.77	4.84	4.91	4.98	5.05	5.11	5.18	5.25	5.32	5.39
8	5.45	5.52	5.59	5.66	5.73	5.80	5.86	5.93	6.00	6.07
9	6.14	6.20	6.27	6.34	6.41	6.48	6.55	6.61	6.68	6.75

Table for converting discharge in second-feet into theoretical horsepower per foot of fall.

[1 second-foot=0.1136 theoretical horsepower per foot of fall. Weight of 1 cubic foot of water=62.5 pounds.]

Tens.	Units.									
	0	1	2	3	4	5	6	7	8	9
0	0.00	0.114	0.227	0.341	0.454	0.568	0.682	0.795	0.909	1.02
1	1.14	1.25	1.36	1.48	1.59	1.70	1.82	1.93	2.04	2.16
2	2.27	2.39	2.50	2.61	2.73	2.84	2.95	3.07	3.18	3.29
3	3.41	3.52	3.64	3.75	3.86	3.98	4.09	4.20	4.32	4.43
4	4.54	4.66	4.77	4.88	5.00	5.11	5.23	5.34	5.45	5.57
5	5.68	5.79	5.91	6.02	6.13	6.25	6.36	6.48	6.59	6.70
6	6.82	6.93	7.04	7.16	7.27	7.38	7.50	7.61	7.72	7.84
7	7.95	8.07	8.18	8.29	8.41	8.52	8.63	8.75	8.86	8.97
8	9.09	9.20	9.32	9.43	9.54	9.66	9.77	9.88	10.0	10.1
9	10.2	10.3	10.5	10.6	10.7	10.8	10.9	11.0	11.1	11.2

1 second-foot equals 40 California miner's inches (law of Mar. 23, 1901).

1 second-foot equals 38.4 Colorado miner's inches.

1 second-foot equals 40 Arizona miner's inches.

1 second-foot equals 7.48 United States gallons per second; equals 448.8 gallons per minute; equals 646,317 gallons for one day.

1 second-foot for one year (365 days) covers 1 square mile 1.131 feet, or 13.572 inches deep.

1 second-foot for one year (365 days) equals 31.536,000 cubic feet.

1 second-foot equals about 1 acre-inch per hour.

1 second-foot for one year (365 days) equals 724 acre-feet.

1 second-foot for one day equals 86,400 cubic feet.

1,000,000,000 (1 United States billion) cubic feet equals 11,570 second-feet for one day.

1,000,000,000 cubic feet equals 414 second-feet for one 28-day month.

1,000,000,000 cubic feet equals 399 second-feet for one 29-day month.

1,000,000,000 cubic feet equals 386 second-feet for one 30-day month.

1,000,000,000 cubic feet equals 373 second-feet for one 31-day month.

100 California miner's inches equals 18.7 United States gallons per second.

100 California miner's inches for one day equals 4.96 acre-feet.

100 Colorado miner's inches equals 2.60 second-feet.

100 Colorado miner's inches equals 19.5 United States gallons per second.

100 Colorado miner's inches for one day equals 5.17 acre-feet.

100 United States gallons per minute equals 0.223 second-foot.
100 United States gallons per minute for one day equals 0.442 acre-foot.
1,000,000 United States gallons per day equals 1.55 second-feet.
1,000,000 United States gallons equals 3.07 acre-feet.
1,000,000 cubic feet equals 22.95 acre-feet.
1 acre-foot equals 325,850 gallons.
1 inch deep on 1 square mile equals 2,323,200 cubic feet.
1 inch deep on 1 square mile equals 0.0737 second-foot per year.
1 foot equals 0.3048 meter.
1 mile equals 1.60935 kilometers.
1 mile equals 5,280 feet.
1 acre equals 0.4047 hectare.
1 acre equals 43,560 square feet.
1 acre equals 209 feet square, nearly.
1 square mile equals 2.59 square kilometers.
1 cubic foot equals 0.0283 cubic meter.
1 cubic foot of water weighs 62.5 pounds.
1 cubic meter per minute equals 0.5886 second-foot.
1 horsepower equals 550 foot-pounds per second.
1 horsepower equals 76.0 kilogram-meters per second.
1 horsepower equals 746 watts.
1 horsepower equals 1 second-foot falling 8.80 feet.
1⅓ horsepower equals about 1 kilowatt.

To calculate water power quickly: $\frac{\text{Second-feet} \times \text{fall in feet}}{11}$ = net horsepower on water wheel realizing 80 per cent of theoretical power.

GAZETTEER OF STREAMS.

The streams, lakes, and ponds described in the following pages comprise all that are named on the topographic maps of Massachusetts surveyed and published by the United States Geological Survey in cooperation with the Commonwealth between 1884 and 1907. The first editions of many of these maps were exhausted, and those that have been reprinted were revised so far as possible to embody changes in cultural features. As the descriptions are based chiefly on the maps they vary in accuracy as the maps vary.

Each stream is described as rising near the point at which the head of the upper tributary apparently draining the largest area is shown on the map, and the elevation of that point is given as the elevation of the source. It is, of course, recognized that this method does not give results of great precision, but it probably causes no greater errors in the determination of length and fall than would be caused by extending each stream to the head of the divide between its basin and that of the adjoining streams. It should be understood, however, that all statements of elevation, length, and fall are merely approximate.

The maps used, which are sheets of the Survey's topographic atlas, are listed below, and an index map showing the area covered

by each sheet may be obtained by applying to the Director, United States Geological Survey, Washington, D. C.:

Abington.
Barnstable.
Barre.
Becket.
Belchertown.
Bennington, Vt.
Berlin, N. Y.-Mass.-Vt.
Blackstone, Mass.-R. I.
Boston.
Boston Bay.
Brattleboro, Vt.-N. H.
Brookfield, Mass.-Conn.
Chatham.
Chesterfield.
Cornwall, Conn.-N. Y.
Crawford, N. H.
Dedham.
Duxbury.
Equinox, Vt.
Fall River, Mass.-R. I.
Falmouth.
Fitchburg, Mass.-N. H.
Framingham.
Franklin, Mass.-R. I.
Gay Head.
Gloucester.
Granby, Conn.
Granville, Mass.-Conn.
Greenfield, Mass.-Vt.
Greylock, Mass.-Vt.
Groton, Mass.-N. H.
Hartford, Conn.
Haverhill, Mass.-N. H.
Hawley, Mass.-Vt.
Holyoke, Mass.-Conn.
Housatonic, Mass.-N. Y.-Conn.
Keene, N. H.-Vt.
Lawrence.
Londonderry, Vt.
Lowell, Mass.-N. H.
Manchester, N. H.
Marlboro.
Marthas Vineyard.
Middleboro.
Milford, N. H.
Monadnock, N. H.
Moosup, Conn.-R. I.
Muskeget.
Nantucket.
Narragansett Bay, R. I.
New Bedford.
Newburyport.
New London, Conn.-N. Y.
Northampton.
Norwich, Conn.
Palmer, Mass.-Conn.
Peterboro, N. H.
Pittsfield, Mass.-N. Y.
Plymouth.
Providence, Mass.-R. I.
Provincetown.
Putnam, Conn.-R. I.
Quinsigamond, Mass.-Conn.-R. I.
Salem.
Sandisfield, Conn.-Mass.
Sheffield, Mass.-Conn.-N. Y.
Springfield, Mass.-Conn.
Stonington, Conn.-R. I.-N. Y.
Taconic, N. Y.-Mass.-Vt.
Taunton.
Ware, Mass.-Conn.
Warwick, Mass.-N. H.-Vt.
Webster, Mass.-Conn.-R. I.
Wellfleet.
Wilmington, Vt.
Winchendon, Mass.-N. H.
Winnepesaukee, N. H.
Winsted, Conn.
Woodstock, Conn.
Worcester.
Yarmouth.

Abbott Brook.—Hampden County; town of Chester; rises 2 miles northeast of Abbott Hill; flows southerly 4½ miles into West Branch of Westfield River (tributary through Westfield River to the Connecticut). Chesterfield sheet.

Aberjona River.—*See* Mystic River.

Abner Pond.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

Accord Pond.—Plymouth County; near village of Queen Anne Corners; outlet, Weir River; about half a mile long. Used as water supply for Hingham. Abington sheet.

Acushnet River.—Bristol County; rises one-half mile south of Little Quittacas Pond; flows southward to the New Bedford Reservoir (not used), then southwestward to Acushnet, where it enters New Bedford Harbor on Buzzards Bay; length, about 8 miles. Middleboro and New Bedford sheets.

Adams Brook.—Franklin and Hampshire counties; rises in the town of Shutesbury; flows in general southwesterly to East village, where it unites with Amethyst Brook to form Fort River (tributary to the Connecticut); length, 6 miles. Belchertown sheet.

Agawam Brook.—Berkshire County; rises in Lake Agawam, in the southern part of the town of Stockbridge; flows northeasterly 1½ miles into Konkapot Brook (tributary to Housatonic River). Pittsfield sheet.

AGAWAM LAKE.—Berkshire County; southern part of the town of Stockbridge; outlet, Agawam Brook to Konkapot Brook (tributary to Housatonic River). Pittsfield sheet.

AGAWAM RIVER.—Plymouth County; rises in Halfway Pond in the town of Plymouth; flows southwestward and westward and discharges into Wareham River (tributary to Buzzards Bay) at Wareham; passes through several ponds; length, about 10 miles. Plymouth sheet.

ALEWIFE BROOK.—Middlesex County; rises a short distance west of the city of Cambridge; flows generally northward for about 2 miles into Mystic River; principal tributary, Little River, which drains Little and Spy ponds; connected by artificial channel with Fresh Pond, formerly part of the water system of Boston and vicinity. Boston sheet.

ALLEN BROOK.—Franklin County; town of Shelburne; rises 2 miles northeast of the village of Shelburne; flows southeastward 1½ miles, then eastward 1½ miles into Hinsdale Brook (tributary through Green River to Deerfield River and thus to the Connecticut). Greenfield sheet.

ALLENS POND.—Bristol County; town of Dartmouth; west of Slocums Neck; bordered on south by tidal marsh; connected with Buzzards Bay by tidal channel. New Bedford and Fall River sheets.

ALUM POND.—Worcester County; 2 miles north of the village of Fiskdale; outlet, a stream one-half mile long flowing southwestward into Long Pond (outlet Quinebaug River and thus through Shetucket River to Thames River and Long Island Sound); about three-fourths mile long and nearly half a mile wide. Brookfield sheet.

AMES POND.—Norfolk and Bristol counties; towns of Stoughton and Easton; a long narrow pond at the head of Town River (tributary through Matfield River to Taunton River and thus to Narragansett Bay). Dedham sheet.

AMETHYST BROOK.—Hampshire County; town of Pelham; head of Fort River (tributary to Connecticut River). Belchertown sheet.

ANDREWS POND.—Barnstable County; 1 mile north of Harwich village; on the edge of a marsh which is drained by a stream flowing southwestward into Herring River (tributary to Nantucket Sound). Yarmouth sheet.

ANNASNAPPET BROOK.—Plymouth County; rises in the town of Plympton; flows south of west 2 miles into Wenatuxet River (tributary through Taunton River to Narragansett Bay. Middleboro sheet.

ANTHONY CREEK.—Berkshire County; town of Adams; a stream 2 miles long, flowing westerly into Tophet Brook (tributary through Hoosic River to the Hudson) just above its mouth. Greylock sheet.

APPONAGANSET RIVER.—Bristol County; town of Dartmouth; an arm of South Dartmouth Harbor; tidal; principal inflowing stream, Buttonwood Brook. New Bedford sheet.

ARCHERS POND.—Norfolk County; one-half mile west of Wrentham and about one-fourth mile north of Whiting Pond. Franklin sheet.

ARM BROOK.—Hampden County; rises east of East Farms, in the town of Westfield flows west of south 3½ miles into Powder Mill Brook (tributary through Westfield River to the Connecticut). Springfield sheet.

ARTICHOKE RIVER.—Essex County; rises 1½ miles southeast of West Newbury, at altitude 120 feet above sea level; flows slightly southeastward 1½ miles, passing around the south slope of Indian Hill, then takes a general northerly course for 3 miles into Merrimack River about 2 miles west of Newburyport. Newburyport sheet.

ASHBY RESERVOIR.—About 2 miles southwest of Mill village; several inflowing streams; outlet Willard Brook, which discharges through Ash Swamp to Squannacook River (tributary through Nashua River to the Merrimack); altitude 980 feet above sea level. Fitchburg sheet.

Ashley Brook.—Berkshire County; rises in Ashley Lake a mile northwest of the village of Washington; flows northwestward 3½ miles into Sackett Brook (tributary the Housatonic). Water is used for part of municipal supply of city of Pittsfield. Becket sheet.

Ashley Hill Brook.—Berkshire County; rises on the north slope of Brace Mountain; flows somewhat east of north 3 miles into Lee Pond Brook (tributary through Bashbish Brook to Rocliff Jansen Kill and thus to the Hudson). Sheffield sheet.

Ashley Lake.—Berkshire County; town of Washington; one-half mile northwest of the village of Washington; outlet, Ashley Brook to Sackett Brook (tributary to the Housatonic); furnishes part of municipal water supply of the city of Pittsfield. Becket sheet.

Ashley Pond.—Hampden County; town of Holyoke; 3 miles southwest of the city of Holyoke; inlet from Hitchcock Pond; outlet, Black Brook to Westfield River (tributary to the Connecticut); more than a mile long; about one-fourth mile wide. Springfield sheet.

Ashmere Lake.—Berkshire County; town of Peru; several inflowing streams; outlet, stream about 1¼ miles long flowing southward into Housatonic Branch (tributary to Housatonic River in Hinsdale). The lake is 1½ miles long and about one-fourth mile wide at its widest part. Becket sheet.

Ashuela Brook.—Franklin County; town of Gill; rises on the north slope of Barnard Hill; flows southwestward about a mile, then southeastward about a mile into Connecticut River. Warwick sheet.

Ashumet Pond.—Barnstable County; 3 miles northeast of East Falmouth; about a mile long. Falmouth sheet.

Asnebumskit Brook.—Worcester County; rises in Asnebumskit Pond on the north slope of Little Asnebumskit Hill near Paxton Center at altitude 1,110 feet above sea level; flows very irregularly northward and northeastward to its junction with Quinapoxet River (tributary to Wachusett Reservoir); passes through several ponds; length, 7 miles; fall 480 feet. Worcester sheet.

Asnebumskit Pond.—Worcester County; north slope of Little Asnebumskit Hill; outlet, Asnebumskit Brook, to Quinapoxet River (tributary to Wachusett Reservoir); altitude, 1,110 feet above sea level. Worcester sheet.

Asneconic Pond.—Worcester County; town of Hubbardston; 2 miles west of East Hubbardston; outlet, a stream about a mile long flowing south of east into Ware River (tributary through Chicopee River to the Connecticut). Worcester sheet.

Assabet Brook.—Worcester and Middlesex counties; rises 1 mile south of Harvard at altitude 550 feet above sea level; flows southeastward 5 miles, then eastward 4 miles, passing around the south side of Spindle Hill and flowing into Assabet River (tributary through Concord River to the Merrimack); fall 420 feet; passes through several small ponds. Marlboro and Framingham sheets.

Assabet River.—Head of Concord River. *See* Concord River.

Assawompsett Pond.—Plymouth County; town of Lakeville; principal inlets, stream from Long Pond (Namasket River) and Bates Brook; outlet, Namasket River to Taunton River (tributary to Narragansett Bay); used by the city of Taunton as a source for municipal supply; about 2 miles long and 1½ miles wide. Immediately south of the eastern arm of the pond (Pocksha Pond) is Great Quitticas Pond, the natural outlet of which is Mattapoisett River; connection between the two ponds is indicated by the map, but the water of Great Quitticas Pond is diverted for the municipal supply of New Bedford. Middleboro sheet.

Assonet River.—Bristol and Plymouth counties; rises in the town of Lakeville; flows in general southwestward into Taunton River (tributary to Narragansett Bay); length, 10 miles; principal tributaries, Cedar Swamp River and Quaker and Mill brooks; tidal in lower course. Middleboro and Taunton sheets.

AVERIC LAKE.—Berkshire County; town of Stockbridge; one-half mile west of Curtisville; natural outlet, a stream one-half mile long flowing southeastward into Marsh Brook (tributary to Housatonic River). Used as a source of water supply for the village of Stockbridge. Pittsfield sheet.

AVERY BROOK.—Franklin County; head of West Brook (tributary through Mill River to the Connecticut). Northampton sheet.

AVERY BROOK.—Franklin County; rises near the village of Heath; flows southward 4 miles into Deerfield River (tributary to the Connecticut) 1½ miles west of East Charlemont. Hawley sheet.

BABCOCK BROOK.—Worcester County; rises near Princeton Center, at altitude 1,030 feet above sea level; flows very irregularly eastward to its junction with East Wachusett Brook (tributary through Stillwater River to Wachusett Reservoir); length, about 3 miles. Worcester sheet.

BABERY HILL BROOK.—Middlesex County; a stream about 1½ miles long flowing northeastward into Squannacook River (tributary through Nashua River to the Merrimack) at Townsend. Groton sheet.

BACHELDER BROOK.—Essex County; rises in a swamp about 3 miles northwest of Ipswich, at altitude 60 feet above sea level; flows northward 2½ miles into Mill River (tributary through Parker River to Plum Island River, and thus to the Atlantic Ocean); marshy throughout much of its course. Salem sheet.

BACHELOR BROOK.—Hampshire County; rises 3 miles northwest of Belchertown as a small stream that flows into Upper Pond; passes southward through Middle and Lower ponds, southwestward to Forge Pond, thence in general westerly into Connecticut River a mile northwest of South Hadley; receives many small tributaries draining south slopes of the Holyoke Range. The only named tributary is Elmer Brook. Belchertown and Northampton sheets.

BACK RIVER.—Barnstable County; town of Bourne; north of Monument Beach; a tidal channel into Phinneys Harbor, Buzzards Bay. Falmouth sheet.

BACK RIVER.—*See* Duck Hill River.

BADDACOOK BROOK.—Middlesex County; rises in Baddacook Pond 2 miles northeast of Groton at altitude 230 feet above sea level; flows southeastward 1 mile into Cow Pond on Cow Pond Brook (tributary through Massapoag ponds to Salmon Brook and thus to the Merrimack); fall, about 30 feet. Groton sheet.

BADDACOOK POND.—Middlesex County; 2 miles northeast of Groton; outlet, Baddacook Brook to Cow Pond on Cow Pond Brook (tributary through Massapoag ponds to Salmon Brook and thus to the Merrimack); altitude, about 230 feet above sea level. Groton sheet.

BAD LUCK BROOK.—Bristol County; town of Rehoboth; rises 2 miles southeast of Great Meadow Hill; flows southwestward to the reservoir east of Mount Terrydiddle, thence northwestward to Palmer River (head of Warren River), which is tributary to Narragansett Bay); length, about 6 miles. Taunton sheet.

BAD LUCK POND.—Worcester County; town of Douglas; west of East Douglas; an expansion of Mumford River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

BAD LUCK POND.—Worcester County; town of Douglas; 2 miles west of the village of Douglas and one-half mile north of Wadkin Hill; outlet, a stream about a mile long, flowing northward into Willis Pond Reservoir (outlet to Mumford River and thus through Blackstone River to Seekonk and Providence rivers and Narragansett Bay). Webster sheet.

BAILEY BROOK.—Worcester County; a stream about 1 mile long, flowing from the north slope of White Hill northward into Wekepeke Brook (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack). Worcester sheet.

BAILEY BROOK.—Worcester County; rises on the south slope of Nineteenth Hill; flows southwestward 4 miles into Otter River (tributary through Millers River to the Connecticut). Winchendon sheet.

BAITING BROOK.—Middlesex County; rises 2½ miles northwest of Framingham Center at altitude about 340 feet above sea level; flows generally southeastward 2½ miles into a small pond which has outlet by a small stream to Sudbury River (tributary through Concord River to the Merrimack); fall about 140 feet. Framingham sheet.

BAKER BROOK.—Worcester County; town of Gardner; rises one-half mile west of South Gardner Reservoir; flows northward into a pond on Foster Brook (tributary to Otter River and thus through Millers River to the Connecticut); less than 2 miles long. Fitchburg sheet.

BAKER BROOK.—Worcester County; rises about 4 miles north of the city of Fitchburg, at altitude 860 feet above sea level; flows southeastward to its junction with North Branch of Nashua River (tributary through Nashua River to the Merrimack); length, 7 miles; principal tributaries, Scott Brook and Pearl Hill Brook. Fitchburg sheet.

BAKER POND.—Hampden County; town of Brimfield; a small pond discharging by a stream flowing southeastward into Long Pond (outlet to Quinebaug River and thus through Shetucket River to Thames River and Long Island Sound). Brookfield sheet.

BAKERS POND.—Barnstable County; town of Dennis; 2 miles south of East Dennis. Yarmouth sheet.

BAKERS POND.—Barnstable County; town of Orleans; 2 miles southwest of village of Orleans. Wellfleet sheet.

BALD PATE POND.—Essex County; one-half mile northeast of South Georgetown, at altitude 100 feet above sea level; inlets, two small streams from the north; outlet through Penn Brook to Parker River (tributary through Plum Island River to the Atlantic Ocean). Salem sheet.

BALDWIN POND.—Middlesex County; in a swamp about one-fourth mile east of Sudbury River and 1 mile northwest of Wayland; outlet, a small stream to Sudbury River (tributary through Concord River to the Merrimack); very small. Framingham sheet.

BANCROFT BROOK.—Middlesex County; a stream about a mile long, flowing southward into Robinson Brook (tributary through Nashua River to the Merrimack). Groton sheet.

BARE HILL POND.—Middlesex County; one-half mile southwest of Harvard; inlet, Bowers Brook; outlet by Bowers Brook to Nonacoicus Brook and thus through Nashua River to the Merrimack; altitude about 330 feet above sea level; a large pond with very irregular outline, about 1 mile long and one-half mile in maximum width. Marlboro sheet.

BARROWS BROOK.—Plymouth County; rises one-half mile northwest of Pine Hill; flows north of west 2 miles into Jones River Brook (tributary through Jones River to Kingston Bay, a branch of Massachusetts Bay). Middleboro sheet.

BARTHOLOMEW POND.—Essex County; a very small pond 1½ miles southwest of Salem and 1½ miles northwest of Lynn; altitude 100 feet above sea level; outlet, a small stream to Brown Pond, which is 1½ miles from Wenuchus Lake (tributary to a branch of the Saugus that forms part of the drainage system of the city of Lynn). Salem sheet.

BARTLETT BROOK.—Hampshire County; town of Plainfield; a stream about 2 miles long flowing southward into Westfield River (tributary to the Connecticut) a mile east of West Cummington. Hawley and Chesterfield sheets.

BARTLETT POND.—Plymouth County; town of Plymouth; northwest of Manomet Point; separated from the ocean by a sand bar. Plymouth sheet.

BARTLETT POND.—Worcester County; 1 mile east of Northboro; inlet, Stirrup Brook from Little Chauncey Pond; outlet, Stirrup Brook to Assabet River (tributary through Concord River to the Merrimack; altitude about 440 feet. Marlboro sheet.

BARTLETTS BROOK.—Hillsboro County, N. H., Essex County, Mass.; rises in the town of Pelham in Hillsboro County, N. H., one-half mile northwest of the Massachusetts-New Hampshire boundary, at altitude about 185 feet above sea level; flows southeastward 2 miles, then north of east 2 miles into Merrimack River about 2 miles west of Lawrence, Mass.; principal tributary, a small stream from Peters Pond. Lowell and Lawrence sheets.

BARTLETTS BROOK.—Plymouth County; rises in Meeting House Swamp in the town of Middleboro; flows west of north along the western edge of Great Cedar Swamp, into Wenatuxet River (tributary through Taunton River to Narragansett Bay); length, about 4 miles; principal tributary, Dansons Brook. Middleboro sheet.

BASHBISH BROOK.—Berkshire County, Mass., Columbia County, N. Y.; formed in the town of Mount Washington by the union of Guilder and City brooks. City Brook, draining the larger area, rises between Mount Everett and Race Mountain and flows north of west to the junction with Guilder Brook. From this point Bashbish Brook flows northwestward to Copake Ironworks and thence southwesterly to its junction with Rocliff Jansen Kill (tributary to the Hudson); length east of the Massachusetts-New York boundary line (to head of City Brook) about 5 miles; principal tributaries in this area, Wright and Lee Pond brooks. Sheffield and Copake sheets.

BASIN BROOK.—Franklin County; rises near South Hawley; flows northwestward 2½ miles into King Brook (tributary through Chickley River to Deerfield River and thus to the Connecticut). Hawley sheet.

BASIN POND.—Berkshire County; a mile west of Becket Mountain, in the eastern part of the town of Lee. The map shows two natural outlets—one from the west end (Basin Branch), the other from the southeast corner; both outflowing streams discharge naturally to the brook connecting Greenwater Pond with Housatonic River at Lee. The water of these streams is used as a municipal water supply for the village of Lee. Becket sheet.

BASS CREEK.—Barnstable County; a tidal channel in the marsh north of Barnstable Harbor. Barnstable sheet.

BASS CREEK.—Barnstable County; town of Sandwich; a tidal channel in the marsh back of Scusset Beach. Plymouth sheet.

BASSETT BROOK.—Berkshire County; rises 1½ miles southwest of Mount Greylock; flows southeastward 3 miles into Hoosic River (tributary to the Hudson) at Cheshire Harbor. Greylock sheet.

BASSETT BROOK.—Plymouth County; rises in the southern part of the town of Duxbury; flows southward 1½ miles into Hall Brook (tributary through Jones River to Kingston Bay, a branch of Massachusetts Bay). Duxbury sheet.

BASS POND.—Hampden County; a small pond 3 miles east of Springfield; between two forks of the south branch of Mill River (tributary to the Connecticut). Springfield sheet.

BASS RESERVOIR.—Franklin County; town of Warwick; west of Mount Grace; on Mill Brook (tributary to Connecticut River). Warwick sheet.

BASS RIVER.—Barnstable County; rises northwest of Germans Hill, 1½ miles southeast of village of Yarmouth; flows northeastward into Mill Pond, eastward to Follins Pond, southeastward to South Dennis, thence southwestward into Nantucket Sound; tidal below Follins Pond; length to extreme head, 8 miles. Yarmouth sheet.

BASS RIVER.—Essex County; rises about 2 miles east of Danvers; flows somewhat southeastward 2 miles into an arm of Beverly Harbor at Beverly. Salem sheet.

Bass River.—Plymouth County; a tidal channel on the north side of Green Harbor Marsh. Duxbury sheet.

Bateman Pond.—Middlesex County; a very small pond 2 miles south of Carlisle, at altitude about 200 feet above sea level; outlet, a stream flowing into Spencer Brook (tributary through Assabet River to Concord River and thus to the Merrimack). Framingham sheet.

Bates Brook.—Plymouth County; rises in the swamp near Haskins station; flows very irregularly southward into Assawompsett Pond (outlet through Namasket River to Taunton River and thus to Narragansett Bay) northwest of Green Point; about 2 miles long. Middleboro sheet.

Bearden Brook.—Hampden County; a stream 1½ miles long flowing southwestward into Westfield River (tributary to the Connecticut) one-half mile north of Turtle Bend Mountain. Granville sheet.

Bear Meadow Brook.—Cheshire County, N. H., Worcester County, Mass.; rises in the southeastern part of the town of Rindge; flows southwestward 2½ miles, then southeastward nearly a mile to its junction with Bluefield Brook to form Millers River (tributary to the Connecticut). Fitchburg sheet.

Bear Meadow Brook.—Essex County; rises in a very small pond one-half mile northeast of Powder House Hill and about 1½ miles north of Lawrence; flows generally northeastward 2 miles into Hawkes Brook (tributary to Merrimack River). Lawrence and Haverhill sheets.

Bear Meadow Brook.—Middlesex County; rises about a mile north of Reading, at altitude 80 feet above sea level; flows generally east of north 2 miles into Ipswich River. Lawrence sheet.

Bear River.—Franklin County; rises 1½ miles east of Buckland Four Corners; flows southeasterly 2 miles, then easterly and northeasterly 4 miles to its junction with Deerfield River (tributary to the Connecticut); tributary, Pea Brook. Hawley and Greenfield sheets.

Beaver Brook.—Essex County; rises one-half mile south of West Newbury, at altitude about 100 feet above sea level; flows southeastward 3 miles through a swamp and small pond into Parker River (tributary to Plum Island River, and thus to the Atlantic Ocean) 1 mile west of Byfield. Newburyport sheet.

Beaver Brook.—Essex County; rises about 1½ miles west of Danvers, at altitude 120 feet above sea level; flows southeastward one-half mile, northeastward 1 mile to the village of Beaver Brook, then generally southeastward 2 miles to its junction with Crane Brook to form Crane River (a tidewater channel tributary to Essex Branch and thus to the Atlantic Ocean at Beverly Harbor) at Danvers; fall from source to junction with Crane Brook, 80 feet; marshy throughout much of its course. Salem sheet.

Beaver Brook.—Franklin and Hampshire counties; rises in the southwestern part of the town of Whately; flows southeastward 2 miles, thence southwesterly 3 miles into Mill River (tributary to the Connecticut) at Leeds. Northampton sheet.

Beaver Brook.—Hampshire County; town of Ware; rises one-half mile north of Morton Pond; flows southward 5 miles into Ware River (tributary through Chicopee River to the Connecticut) west of Gibbs Crossing. Belchertown and Palmer sheets.

Beaver Brook.—Hillsboro County, N. H., Middlesex County, Mass.; rises in the town of Chester, N. H., about 3½ miles north of the head of Beaver Lake, at altitude about 460 feet above sea level; takes a general southwesterly course for about 12 miles, across the towns of Derry and Londonderry, to Hudson, N. H., southeastward 4 miles to Pelham, N. H., southwestward again 4 miles to Collinsville, Mass., then southeastward 3 miles into the Merrimack. The greater part of the drainage basin lies in New Hampshire. In Massachusetts its principal tributary is Double Brook. Manchester and Lowell sheets.

BEAVER BROOK.—Middlesex County; rises about 2 miles south of Lexington, flows in general southward to junction with Clematis Brook near Waltham, then east and south into Charles River at Waltham; passes through Hardys Pond. Boston sheet.

BEAVER BROOK.—Middlesex County; rises near the south slope of Chestnut Hill, 2 miles west of Chelmsford Center, at altitude 280 feet above sea level; flows generally southward 1½ miles, then takes an irregular course northeastward 4 miles into River Meadow Brook (tributary through Concord River to the Merrimack) one-half mile east of Chelmsford Center; it passes through a small pond at Chelmsford Center. Lowell sheet.

BEAVER BROOK.—Middlesex County; rises 1 mile south of Boxboro, at altitude about 330 feet above sea level; takes a general northeasterly course through Mill Pond to Forge Pond (outlet through Stony Brook to Merrimack River); marshy in lower part of its course. Marlboro, Groton, and Lowell sheets. *See also* Stony Brook.

BEAVER BROOK.—Plymouth County; rises in the town of Holbrook; flows southward to a point near East Bridgewater, where it unites with Salisbury Plain River to form Matfield River (tributary through Taunton River to Narragansett Bay); length, 8 miles; passes through a number of small ponds. Abington sheet.

BEAVER BROOK.—Plymouth County; town of Bridgewater; a stream about a mile long flowing west of south into Spring Brook (tributary through Taunton River to Narragansett Bay). Middleboro sheet.

BEAVER BROOK.—Worcester County; rises on the southwest slope of Winter Hill; flows east of south 4 miles, thence southwestward into one of the reservoirs above Curtis Pond (outlet, Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay). Worcester sheet.

BEAVER BROOK.—Worcester County; town of Phillipston; flows northward into Millers River (tributary to Connecticut River) at South Royalston; length, 7 miles. Winchendon sheet.

BEAVER BROOK.—Worcester County; town of Royalston; rises 1 mile north of South Royalston; flows northeastward 2½ miles, then northwestward 3 miles into a pond on Lawrence Brook (tributary through East Branch of Tully River to Tully River and thus through Millers River to the Connecticut). Winchendon sheet.

BEAVER CREEK.—Bennington County, Vt., Berkshire County, Mass.; rises in the southern part of the town of Stamford, Vt.; flows southeasterly 2 miles into Clarksburg, Mass., then northeasterly 1½ miles into the North Branch of Hoosic River (tributary through Hoosic River to the Hudson). Greylock sheet.

BEAVER DAM BROOK.—Essex County; rises 3 miles northeast of Wakefield, at altitude 80 feet above sea level; flows generally west of south 2½ miles into Saugus River, which discharges into Boston Bay. Lawrence sheet.

BEAVER DAM BROOK.—Plymouth County; rises 2 miles northwest of the village of Carver; flows southwestward 2 miles, then east of south 1½ miles into Weweantic River (tributary to Buzzards Bay). Middleboro sheet.

BEAVER DAM POND.—Plymouth County; town of Plymouth; a large pond of very irregular outline lying a mile or more back from the beach near the village of Manomet; outlet to Bartlett Pond. Plymouth sheet.

BEAVER DAM POND.—Plymouth County; town of Wareham; a small pond 1 mile northwest of Onset. Plymouth sheet.

BEAVER POND.—Essex County; 4½ miles west of Manchester; inlet, a small marshy stream coming in from the north; outlet, a small stream to Miles River (tributary to Ipswich River); length, 1 mile; very narrow. Salem sheet.

BEAVER POND.—Middlesex County; three-fourths mile south of Lincoln; one inflowing stream; outlet, a stream about a mile long flowing southward into Stony Brook (tributary to Charles River). Framingham sheet.

BEAVER POND.—Norfolk County; one inlet; outlet, a stream 1½ miles long flowing southward into Charles River (tributary to Boston Bay); altitude about 225 feet Franklin sheet.

BEAVER POND.—Norfolk County; 1 mile west of Franklin; inlet, Mine Brook; outlet, Mine Brook to Charles River (tributary to Boston Bay). Franklin sheet.

BECK POND.—Essex County; 3 miles northwest of Manchester; outlet, a small stream to Round Pond, which has outlet by another small stream to Chebacco Lake and thus to Essex River; about one-half mile long; maximum width, less than one-fourth mile; altitude, 60 feet above sea level. Salem sheet.

BEDLAM BROOK.—Hampden County; town of Blandford; rises on the west slope of Dug Hill; flows east of south 2½ miles into Pebble Brook and thus to Springfield Reservoir on Westfield Little River. *See* Granville sheet.

BELL BROOK.—Worcester County; rises in the town of Oakham; flows northwestward 3 miles to Barre Plains, where it unites with Burrow Brook to form Pratt Brook (tributary through Ware River to Chicopee River and thus to the Connecticut). Barre sheet.

BENNETT BROOK.—Franklin County; rises just south of the Vermont-Massachusetts line, in the town of Northfield; flows southeasterly to its junction with Connecticut River one-half mile east of Mount Hermon; length, 5 miles. Warwick sheet.

BENNETT BROOK.—Middlesex County; rises 2 miles northeast of Harvard Village; flows west of north 2 miles, then northeastward 3½ miles into Forge Pond (through which it is tributary to Stony Brook and thus to the Merrimack); passes through Spectacle Pond. Groton sheet.

BENSON POND.—Berkshire County; town of Washington; about a mile east of Washington Station; outlet, Coles Brook to West Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket sheet.

BENSONS POND.—Plymouth County; 2½ miles east of South Middleboro; outlet, a stream about one-half mile long, flowing eastward to Weweantic River (tributary to Buzzards Bay). Middleboro sheet.

BENTON LAKE.—Berkshire County; town of Otis; a mile north of East Otis; principal inlet, stream from White Lily Pond; outlet to Otis Reservoir, which is used to regulate the flow of Farmington River (tributary to the Connecticut); about a mile long and one-half mile wide. Sandisfield sheet.

BERRY POND.—Berkshire County; southeastern part of the town of Hancock; outlet, Goodrich Hollow Brook to Wyomanock Creek (tributary through Kinderhook Creek to the Hudson). Berlin sheet.

BIG BROOK.—Hampden County; rises on the east slope of Wilbraham Mountains, in the town of Wilbraham; flows southerly 4 miles to Hampden, where it enters Scantic Brook (tributary through Scantic River to the Connecticut). Palmer sheet.

BIGELOW BROOK.—Worcester County; rises in the town of Phillipston on the north slope of Prospect Hill; flows southeastward 2½ miles into the East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Winchendon sheet.

BIG SANDY POND.—Barnstable County; town of Yarmouth; 1¼ miles north of West Yarmouth. Yarmouth sheet.

BILLINGS POND.—Essex County; 2 miles northeast of Wakefield; inlet, a stream 1 mile long coming in from the north; outlet, a small stream flowing into Saugus River, which discharges into Boston Bay; altitude, 100 feet above sea level; length, about one-half mile; maximum width, about one-fourth mile. Lawrence sheet.

BILLINGS POND.—Norfolk County; town of Sharon; outlet, Rumford River to Three-mile River (tributary through Taunton River to Narragansett Bay). Dedham sheet.

Billington Sea.—Plymouth County; town of Plymouth; a lake more than a mile long and one-half mile wide; outlet through Town Brook to Plymouth Harbor; inlet from Little Pond. Plymouth sheet.

Birch Brook.—Berkshire County; head of Buxton Brook (tributary through Hemlock Brook to Hoosic River and thus to the Hudson). Berlin and Greylock sheets.

Birch Brook.—Bristol County; rises near North Rehoboth; flows northeastward 4 miles into Threemile River (tributary through Taunton River to Narragansett Bay); principal tributary, Meadow Brook. Taunton sheet.

Birch Pond.—Essex County; 1 mile northwest of Lynn; inlet, small stream, unnamed on the map; outlet, stream to Revere Brook (tributary to Saugus River, which discharges into Boston Bay); altitude, 80 feet above sea level; length, about 1 mile; maximum width, less than one-fourth mile. Boston and Boston Bay sheets.

Bixby Reservoir.—Middlesex County; 2 miles west of south from Townsend; natural outlet, a stream 2 miles long flowing northeastward into Harbor Pond on Squannacook River (tributary through Nashua River to the Merrimack). Groton sheet.

Black Betty Brook.—*See* West Meadow Brook.

Black Brook.—Bristol County; town of Easton; rises about 1½ miles southwest of North Easton; flows southeasterly into Great Cedar Swamp, the drainage of which passes through Town River to Matfield River and thus through Taunton River to Narragansett Bay; length, about 6 miles, about 3 miles of its course being in the swamp. Dedham and Taunton sheets.

Black Brook.—Essex County; rises 4 miles southwest of Ipswich; flows somewhat northwestward for about 3 miles into Ipswich River; passes through Cutlet Pond near its source; marshy throughout much of its course. Salem sheet.

Black Brook.—Hampden County; rises about 3 miles north of Blandford; flows southeastward 5 miles to Russell, where it enters Westfield River (tributary to the Connecticut); principal tributary, Freeland Brook. Granville sheet.

Black Brook.—Hampden County; rises on Sheldon Hill, in the town of Holyoke; flows southwestward through Hitchcock and Ashley ponds and joins Westfield River (tributary to the Connecticut) near Tatum in the town of West Springfield; length, 7½ miles. Springfield sheet.

Black Brook.—Middlesex County; rises one-half mile east of Lower Massapoag Pond, at altitude 200 feet above sea level; flows northwest and west into Salmon Brook (tributary to the Merrimack near Dunstable); length, about 2 miles. Lowell sheet.

Black Brook.—Plymouth County; rises 1 mile northwest of South Middleboro; flows west of south 5 miles, then westward one-half mile into Great Quittacas Pond, the natural outlet of which is Mattapoisett River; principal tributary, Millers Neck Brook. Middleboro sheet.

Black Brook.—Plymouth County; rises near Northville, about 1½ miles south of Whitman; flows southward 3 miles into Satucket River (tributary through Matfield River to Taunton River and thus to Narragansett Bay). Abington sheet.

Blackfish Creek.—Barnstable County; town of Wellfleet; a tidal channel extending from South Wellfleet into Wellfleet Harbor. Wellfleet sheet.

Blackmore Pond.—Plymouth County; a mile south of South Wareham; outlet, a stream 1 mile long flowing southwestward into Hammond Brook (tributary through Weweantic River to Buzzards Bay). Middleboro sheet.

Black Point Pond.—Dukes County; Marthas Vineyard; Chilmark; between Chilmark Pond and Tisbury Great Pond; one of the group of connected ponds on the southern border of the island separated from the Ocean by a continuous barrier beach. Marthas Vineyard sheet.

BLACK POND.—Hampden County; 2½ miles northwest of West Granville; outlet, Borden Brook (tributary to Springfield reservoir on Westfield Little River, p. 424. Granville sheet.

BLACK POND.—Middlesex County; 1 mile north of the village of Boxboro; one-fourth mile east of Beaver Brook. Groton sheet.

BLACK POND.—Plymouth County; town of Norwell; at southern edge of Black Pond Swamp; outlet, Second Herring Brook to North River. Abington sheet.

BLACK POND.—Plymouth County; town of Plymouth; 2 miles west of Lookout Point; very small. Plymouth sheet.

BLACK POND.—Worcester County; a very small pond 4 miles southeast of East Douglas. Blackstone sheet.

BLACK ROCK CREEK.—Essex County; a tidal stream beginning 1½ miles east of East Salisbury and following a very irregular course southward into Merrimack River at its mouth; length, 2½ miles; marshy. Newburyport sheet.

BLACKS CREEK.—Norfolk County; a stream about 3 miles long rising in the town of Milton, flowing in general north of east, and discharging into Quincy Bay. Boston Bay sheet.

BLACKSTONE RIVER.—Worcester County, Mass., and Providence County, R. I.; formed near the city of Worcester by the union of several brooks. Kettle Brook, which drains the larger area, and is therefore considered the continuation of the river, rises on the west slope of Little Asnebumskit Hill and flows southeastward to Stoneville, thence eastward and northward to its junction with Blackstone River in the southwestern part of the city of Worcester; from its junction the Blackstone flows southeastward to Seekonk River and thus through Providence River to Narragansett Bay; length to head of Kettle Brook, about 45 miles; the principal tributaries in Massachusetts below Kettle Brook are Singleton Brook and Quinsigamond, Mumford, West, and Mill rivers. The basin contains no large lakes except Lake Quinsigamond, but small ponds and reservoirs used for storage are numerous; its flow is thus fairly constant and its powers are very fully utilized; average rainfall on the basin about 45 inches. Gaging stations: Blackstone River at Woonsocket, R. I., 1904–5; Blackstone River at Berkeley, R. I., 1901–2; Blackstone River at Albion, R. I., 1915. Worcester, Marlboro, Webster, and Blackstone sheets.

BLACKWATER POND.—Plymouth County; town of Kingston; principal inlet, Halls Brook; outlet, Halls Brook to Jones River (tributary through Kingston Bay to Massachusetts Bay). Duxbury sheet.

BLAIR POND.—Hampden County; town of Blandford; one inflowing stream; outlet, a stream one-half mile long flowing southeastward into Pond Brook (tributary through Pebble Brook to Springfield reservoir on Westfield Little River, p. 424). Granville sheet.

BLISS BROOK.—Plymouth County; town of Rehoboth; rises about 3 miles southwest of North Rehoboth; flows southward 5 miles into Palmer River (the head of Warren River, tributary to Narragansett Bay); tributary, Wolf Plain Brook. Providence sheet.

BLOCK BROOK.—Hampden County; rises in West Springfield; flows southerly 2½ miles into Westfield River (tributary to the Connecticut). Springfield sheet.

BLODGETT MILL BROOK.—Worcester and Hampden counties; rises (as Tufts Brook) 2 miles southeast of West Warren; flows southwestward 1½ miles, northwestward 2 miles, then westward and southwestward 2½ miles into Quaboag River (tributary through Chicopee River to the Connecticut); principal tributary, Taylor Brook. Brookfield and Palmer sheets.

BLOOD POND.—Worcester County; town of Dudley; 2½ miles northeast of West Dudley; outlet, a stream about 3 miles long flowing southwestward into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). Webster sheet.

Bloody Brook.—Essex County; rises about a mile north of Lawrence, just south west of Powder House Hill, at altitude about 130 feet above sea level; flows southeastward 1½ miles into Spickett River (tributary to the Merrimack at Lawrence; fall from source to mouth, about 70 feet. Lawrence sheet.

Bloody Brook.—Franklin County; town of Deerfield; rises on the northwest slope of North Sugarloaf; flows southwesterly into Mill River (tributary to the Connecticut) 1½ miles west of South Deerfield; length, 3 miles. Northampton sheet.

Bloody Pond.—Plymouth County, town of Plymouth; east-central part of the township; one-half mile long. Plymouth sheet.

Bluefield Brook.—Worcester County. *See* Millers River.

Boat Meadow River.—Barnstable County; a channel in the marsh, three-fourths mile north of Rock Harbor. Wellfleet sheet.

Bogastow Brook.—Middlesex and Norfolk counties; rises on the northwest slope of Long Hill, about 3 miles northwest of Holliston, at altitude 250 feet above sea level; takes a very irregular but in general southeasterly course to its junction with Charles River 2 miles northwest of Medfield, in Norfolk County; length, about 10 miles; many small tributaries unnamed on the map. Franklin sheet.

Boon Pond.—Middlesex County; 3 miles east of Hudson and just southwest of Boon Hill; altitude about 200 feet above sea level; inlet, a stream about one-half mile long and marshy; outlet, a very small stream flowing northwestward into Assabet River (tributary through Concord River to the Merrimack); length, 1 mile; maximum width, one-fourth mile. Marlboro and Framingham sheets.

Boot Pond.—Plymouth County; town of Plymouth; southeast of Great South Pond, from which it is separated by a narrow ridge. Plymouth sheet.

Borden Brook.—Hampden County; rises in Black Pond, 2½ miles northwest of West Granville; flows northeasterly and easterly 4½ miles to Russell, where it joins Pebble Brook (tributary to Springfield Reservoir on Westfield River, p. 424). Granville sheet.

Boston Brook.—Essex County; rises in a swamp about a mile southeast of Andover on the west slope of Holts or Prospect Hill, at altitude 260 feet above sea level; flows north of east 3 miles, northward about a mile, and then takes a very irregular course southeastward for 5½ miles into Ipswich River; marshy throughout most of its course; fall from source to mouth, about 200 feet. Lawrence and Salem sheets.

Bottomless Pond.—Middlesex County; 2 miles south of Maynard; one-half mile southwest of Willis Pond, at the head of Run Brook (tributary through Hop Brook to Wash Brook and thus through Sudbury and Concord River to the Merrimack; altitude about 200 feet above sea level; very small. Framingham sheet.

Bottomless Pond.—Middlesex County; a very small pond 2½ miles south of Maynard, 2 miles southeast of Assabet River (tributary through Concord River to the Merrimack; altitude, 200 feet above sea level. Framingham sheet.

Bottomly Pond.—Worcester County; town of Paxton; 1 mile west of Asnebumskit Hill near the head of Kettle Brook, which is its natural outlet to Blackstone River (tributary through Seekonk and Providence rivers to Narragansett Bay); used as a part of the water supply system of Worcester. Worcester sheet.

Bound Brook.—Plymouth and Norfolk counties; rises in Norfolk County one-half mile northwest of Otis Hill, in the town of Norwell; flows northward and northeastward and discharges into the ocean through Cohasset Harbor; length from Cohasset Cove to head, about 6 miles. Abington sheet.

Bow Brook.—Middlesex County; rises in Turner Pond in Worcester County, at altitude about 310 feet above sea level; flows northeastward 2 miles into a stream connecting Shirley Reservoir with Nashua River (tributary to the Merrimack); marshy. Groton sheet.

Bowens Pond.—Barnstable County; town of Falmouth; a pondlike bay connected with Vineyard Sound by a narrow channel. Falmouth sheet.

Bowerman Creek.—Berkshire County; a stream a mile long flowing northwestward into Hoosic River (tributary to the Hudson) 2 miles south of North Adams. Greylock sheet.

Bowers Brook.—Middlesex County; rises on Vaughn Hill at altitude about 500 feet above sea level; flows northeastward through Bare Hill Pond, then irregularly northward into the pond south of Ayer through which it discharges to Nonacoicus Brook and thus through Nashua River to the Merrimack; length, about 8 miles; principal tributary, Cold Spring Brook; marshy through much of its course below Bare Hill Pond. Marlboro and Groton sheets.

Boyce Brook.—Cheshire County, N. H., Worcester County, Mass.; rises in the town of Fitzwilliam, N. H., south of Little Monadnock Mountain; flows southward 6 miles and joins the East Branch of Tully River (tributary through Tully River to Millers River and thus to the Connecticut) in Long Pond, in the town of Royalston. Winchendon sheet.

Bozrah Brook.—Franklin County; town of Hawley; rises 2 miles northwest of the village of Hawley; flows northward 3 miles into Deerfield River (tributary to the Connecticut) opposite Charlemont. Hawley sheet.

Bradford Branch.—Franklin and Hampshire counties; rises in the town of Conway; flows southeastward 3½ miles into the East Branch of Mill River (tributary through Mill River to the Connecticut). Chesterfield and Northampton sheets.

Branch Creek.—Plymouth County; town of Marshfield; a tidal estuary in the lower course of North River. Duxbury sheet.

Branch River.—Worcester County, Mass., and Providence County, R. I.; rises in Wallum Pond near the western boundary of Rhode Island; flows easterly and northeasterly through several small ponds and enters Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay) near Blackstone, Mass.; receives drainage from other ponds and swamps. Gaging station at Branch village, R. I., 1909–1913. Webster, Blackstone, and Burrillville sheets.

Bread and Cheese Brook.—Bristol County; rises about 1½ miles east of Watuppa Pond; flows east of south 4½ miles to its junction with the East Branch of Westport River (tributary to the ocean through Westport Harbor). Fall River sheet.

Breakneck Brook.—Worcester County; rises in the northeastern part of the town of Union, Windham County, Conn., in Great Neck Pond; flows northeastward 4½ miles into Quinebaug River (tributary to Shetucket River and thus through Thames River to Long Island Sound). Brookfield sheet.

Breeds Pond.—Essex County; on the northwest outskirts of Lynn; outlet, Revere Brook to Saugus River, which discharges into Boston Bay. Boston Bay sheet.

Briars Pond.—Barnstable County; town of Harwich; 1 mile south of Long Pond. Yarmouth sheet.

Bridge Brook.—Middlesex County; rises on the north slope of Pendleton Hill, one-half mile northeast of Sudbury Center, at altitude about 160 feet above sea level; flows generally north of east 2 miles into Sudbury River (tributary through Concord River to the Merrimack); swampy throughout its course. Framingham sheet.

Bridge Creek.—Barnstable County; a tidal channel in the Great Marshes west of Barnstable Harbor. Barnstable sheet.

Bridge Meadow Brook.—Middlesex County; rises on the north slope of Oak Hill, 6 miles west of Lowell, at altitude 200 feet above sea level; flows in general east of north to its junction with Merrimack River at Tyngsborough; length, 4 miles. Lowell sheet.

Briggs Pond.—Barnstable County; town of Harwich; 1¼ miles south of Long Pond. Yarmouth sheet.

BRIGHAM POND.—Worcester County; town of Hubbardston; on the west branch of Ware River (tributary through Ware River to Chicopee River and thus to the Connecticut). Worcester sheet.

BROAD BROOK.—Bennington County, Vt., Berkshire County, Mass.; rises in the eastern part of the town of Pownal; flows southwestward 7 miles to the northern part of Williamstown, Mass., where it enters Hoosic River (tributary to the Hudson); length in Massachusetts, 2 miles. Greylock sheet.

BROAD BROOK.—Hampshire County; rises 1 mile southeast of Haydenville; flows southward 1 mile, then turns through the southeast to a northeast and northerly course and unites with Running Gutter Brook (tributary through Mill River to the Connecticut) west of West Hatfield; length, about 4 miles. Northampton sheet.

BROAD BROOK.—Hampshire and Hampden counties; rises 1½ miles southwest of Belchertown; flows southward into Chicopee River (tributary to the Connecticut) 2 miles west of Three Rivers; length, 6 miles, principal tributary, stream from Springfield reservoir. Belchertown and Palmer sheets.

BROAD CREEK.—Nantucket County; Nantucket Island; one of a series of tidal inlets at the western end of the island. Muskeget sheet.

BROAD CREEK.—Plymouth County; town of Marshfield; a tidal estuary in the lower course of North River. Duxbury sheet.

BROAD MARSH RIVER.—Plymouth County; town of Wareham; connects with Wareham River (tributary to Buzzards Bay) between Wareham Neck and Swifts Neck; tidal. Plymouth and Falmouth sheets.

BROAD MEADOW BROOK.—Worcester County. *See* Dorothy Brook.

BROCKTON RESERVOIR.—Norfolk County; town of Avon; 3 miles northwest of Brockton; inlet from a swamp on the north; natural outlet, Saulsbury Brook to Salisbury Plain River and thus through Matfield River to Taunton River and Narragansett Bay; called also Saulsbury Brook reservoir. Dedham sheet.

BRONSON BROOK.—Hampshire County; head of West Branch (tributary through Westfield River to the Connecticut). Chesterfield sheet.

BROOKS POND.—Worcester County; 3 miles northeast of North Brookfield on Fivemile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut); 1½ miles long; nearly one-half mile in maximum width. Barre sheet.

BROWN POND.—Essex County; about 1½ miles north of the city of Lynn and one-half mile from Wenuchus Lake; inlet, a small stream from the north draining Bartholomew Pond; length, about one-half mile; maximum width, about one fourth mile; altitude about 100 feet above sea level. Salem and Boston Bay sheets.

BROWN POND.—Worcester County; town of Phillipston; an expansion of Burnshirt River (tributary through Ware River to Chicopee River and thus to the Connecticut). Winchendon sheet.

BROWNS BROOK.—Worcester County; town of Webster; a stream about 1 mile long flowing southwestward into Lake Chaubunagungamaug (outlet Mill Brook to French River and thus through Quinebaug River to Shetucket River, Thames River, and Long Island Sound). Webster sheet.

BUCKMAN BROOK.—Worcester County; town of Athol; a stream about 2 miles long flowing northward into Millers River (tributary to Connecticut River) 1½ miles southwest of South Royalton. Winchendon sheet.

BUCKMASTER POND.—Norfolk County; southwestern part of town of Dedham; outlet, Hawes Brook to Neponset River. Dedham sheet.

BUCK RIVER.—Berkshire County; rises south of Morley Hill; flows southeastward through the town of Sandisfield to West New Boston, where it joins Clam River (tributary through Farmington River to the Connecticut); length, 6 miles. Sandisfield sheet.

Buel Lake.—Berkshire County; towns of Monterey and New Marlboro; outlet, a stream one-eighth mile long flowing southeastward into Konkapot River (tributary to the Housatonic) near Hartsville. The lake is 1½ miles long and about one-fourth mile wide. Sheffield sheet.

Bull Brook.—Essex County; rises in a swamp northwest of Bartholomew Hill and 3 miles west of Ipswich, at altitude 60 feet above sea level; flows northeastward 4 miles to its junction with Muddy Run; tributary to Rowley River, a tide water channel into Plum Island River (separated from the Atlantic Ocean by Plum Island) about three-fourths mile east of Rowley; marshy; Salem sheet.

Bummet Brook.—Worcester County; rises about 3 miles southeast of Shrewsbury; flows northeastward 2 miles into a pond on Hop Brook (tributary through Assabet River to Concord River and thus to the Merrimack). Marlboro sheet.

Bummet Brook.—Worcester County; town of Shrewsbury; rises just south of the village of Shrewsbury; flows southward to North Grafton, where it enters Quinsigamond River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); length, 5 miles. Marlboro and Blackstone sheets.

Bumps Pond.—Plymouth County; town of Plymouth; one of a group of small ponds in the west-central part of the township. Plymouth sheet.

Bungay Reservoir.—Bristol County; on line between towns of Mansfield and North Attleboro; outlet, Bungay River to Tenmile River (tributary through Seekonk River to Providence River and thus to Narragansett Bay). Franklin and Providence sheets.

Bungay River.—Bristol County; rises in Bungay Reservoir in the town of North Attleboro; flows southward to Attleboro, thence northwestward to Tenmile River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); length, about 5 miles. Providence sheet.

Burbank Pond.—Middlesex County; at East Woburn; about three-fourths mile west of Stoneham; inlet, Aberjona River; outlet, Aberjona River to Mystic lakes and thus through Mystic River to Boston Bay; small. Boston sheet.

Burgess Pond.—Middlesex County; one-half mile northwest of Westford station, Stony Brook Railroad; outlet, a stream one-eighth mile long flowing eastward into Keyes Brook (tributary through Stony Brook to the Merrimack). Lowell sheet.

Burncoat Brook.—Worcester County; rises about a mile northeast of Spencer; flows southeastward through Burncoat Pond to Cedar Meadow Pond, thence eastward to Town Meadow Brook, the head of French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

Burncoat Pond.—Worcester County; about half way between Spencer and Leicester; outlet, Burncoat Brook through Cedar Pond to Town Meadow Brook, the head of French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

Burnell Pond.—Franklin County; town of Chesterfield; several small inflowing streams; outlet, Dead Branch to East Branch (tributary through Westfield River to the Connecticut); 1 mile long and one-eighth mile wide. Chesterfield sheet.

Burnshirt River.—Worcester County; rises in the town of Phillipston; flows northeastward 1 mile, then southeastward 10 miles into Ware River (tributary through Chicopee River to the Connecticut) 1½ miles below Barre Falls; passes through several ponds; principal tributaries, a stream from Phillipston Pond, which enters in the marsh at East Phillipston, Wine Brook, and Canesto Brook. Gaging station near Templeton (1909). Winchendon and Barre sheets.

Burrow Brook.—Worcester County. *See* Pratt Brook.

BURT POND.—Worcester County; town of Sutton; inlet and outlet, Purgatory Brook, which flows through the pond to Whitins Pond on Mumford River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

BUTTONWOOD BROOK.—Bristol County; rises a mile northwest of the city of New Bedford; flows southward about 4 miles into Apponaganset River (an arm of South Dartmouth Harbor). New Bedford sheet.

BUXTON BROOK.—Berkshire County; rises (as Birch Brook) in the extreme northwestern part of the town of Williamstown; flows southeastward 3½ miles to the city of Williamstown, where it enters Hemlock Brook (tributary through Hoosic River to the Hudson). Berlin and Greylock sheets.

CADWELL CREEK.—Hampshire County; town of Enfield; rises near Packardsville; flows southeastward 2½ miles into the West Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Belchertown sheet.

CADY BROOK.—Worcester County; town of Charlton; rises on the north slope of Curtis Hill; flows southward through Hicks Pond to Charlton City, thence southwestward to its junction with Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at the city of Southbridge; length about 8 miles. Webster and Brookfield sheets.

CALEB POND.—Dukes County; Chappaquiddick Island, east of Marthas Vineyard; a tidal pond connected with the channel between the two islands. Marthas Vineyard sheet.

CALKINS POND.—Hampden County; 1 mile southeast of Palmer Center; outlet, a stream 2½ miles long flowing northward through Forest Pond Into Ware River (tributary through Chicopee River to the Connecticut); small. Palmer sheet.

CANESTO BROOK.—Worcester County; rises in the northwestern part of the town of Hubbardston; flows southeastward 5 miles, then southward and southwestward 1½ miles into Burnshirt River (tributary through Ware River to Chicopee River and thus to the Connecticut); principal tributary, Natty Pond Brook. Winchendon and Barre sheets.

CANOE RIVER. *See* Mill River, Bristol County.

CANTON RIVER.—Norfolk County; rises in Massapoag Pond, in the town of Sharon; flows east of north to Canton, and then northwestward into Neponset River one-half mile below the mouth of Traphole Brook; passes through several small ponds and the large pond at Canton which receives also a stream from Reservoir Pond and one which drains the central part of the town of Stoughton; length of principal branch from Neponset River to Massapoag Pond, about 6 miles; fall between the reservoir and Canton, about 170 feet. Dedham sheet.

CAPE POND.—Essex County; 1½ miles northeast of Gloucester and 1 mile southwest of Rockport; length, about one-half mile; maximum width, about one-eighth mile. Gloucester sheet.

CARPENTERS BROOK.—Bristol County; town of Rehoboth; rises one-half mile southeast of Great Rock; flows southeastward into Palmer River (tributary through Warren River to Narragansett Bay) near the village of Rehoboth; length, 2 miles. Providence sheet.

CARUTH BROOK.—Worcester County; rises one-half mile west of Turkey Hill Pond; flows southwesterly 3 miles into Turkey Hill Brook (tributary through Sevenmile River to East Brookfield River and thus through Quaboag River to Chicopee River and the Connecticut). Worcester sheet.

CASTLE NECK RIVER.—Essex County; rises 2 miles southeast of Ipswich and takes a very irregular course northeastward for 6 miles into the Atlantic Ocean west of Castle Neck; terminates in a tidewater channel; swampy throughout its course. Salem sheet.

CATACOONAMUG BROOK.—Worcester County; rises near Lunenburg at altitude about 530 feet above sea level; flows southeastward about 4 miles and discharges into a small pond which is connected by a very short stream with Shirley Reservoir (tributary through Nashua River to the Merrimack); principal tributaries, streams from Unchechewhaton and Massapoag ponds; fall from head to Shirley Reservoir, 200 feet. Groton sheet.

CATTLE POND.—Plymouth County; town of Plymouth; one-half mile southwest of Halfway Pond. Plymouth sheet.

CEDAR MEADOW POND.—Worcester County; 1½ miles southwest of the village of Leicester; inlet, from Burncoat Pond; outlet, Burncoat Brook to Town Meadow Brook (head of French River, which is tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

CEDAR POND.—Barnstable County; town of Dennis; 1 mile south of East Dennis; Yarmouth sheet.

CEDAR POND.—Barnstable County; 1 mile northwest of North Falmouth; outlet, a short stream flowing westward into Cataunet Harbor, Buzzards Bay. Falmouth sheet.

CEDAR POND.—Essex County; 3 miles west of Peabody; 4 miles northwest of Lynn; outlet, Goldthwait Brook to North River and thus to the Atlantic Ocean at Beverly Harbor; altitude, 80 feet above sea level; small. Salem sheet.

CEDAR POND.—Essex County; in a swamp 3 miles southeast of West Boxford; outlet, a small stream flowing southwestward into Fish Brook (tributary to Ipswich River); altitude, about 140 feet above sea level; very small. Lawrence sheet.

CEDAR POND.—Plymouth County; town of Wareham; just south of Spectacle Pond (outlet through Agawam River to Wareham River and thus to Buzzards Bay) into which it discharges by a short, northward flowing stream; small. Plymouth sheet.

CEDAR POND.—Worcester County; town of Sturbridge; principal inlet, stream from a pond a mile west of Walker Mountain; outlet, a stream half a mile long flowing southward into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). The pond is about 1½ miles long and one-eighth mile in average width. Brookfield sheet.

CEDAR SWAMP BROOK.—Plymouth County; rises 2 miles southwest of South Middleboro; flows southwestward into the swamp that borders the northeast end of Snipatuit Pond; outlet, Massapoisett River and thus to Buzzards Bay. Middleboro sheet.

CEDAR SWAMP POND.—Plymouth County; town of Carver; a very small pond one-half mile west of Wankinco River. Plymouth sheet.

CEDAR SWAMP POND.—Worcester County; on Charles River (tributary to Boston Bay), at the town of Milford; one inflowing stream in addition to Charles River is shown on the map; altitude about 270 feet. Blackstone sheet.

CEDAR SWAMP RIVER.—Plymouth County; town of Lakeville; rises about a mile west of Long Lake; flows northwestward into Assonet River (tributary through Taunton River to Narragansett Bay); length, 4 miles. Middleboro and Taunton sheets.

CENTER BROOK.—Worcester County; town of Upton; rises a mile north of Pratt Pond; flows southward 4½ miles into West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

CENTER HILL POND.—Plymouth County; town of Plymouth; south of Center Hill Point; a short distance back of the beach. Plymouth sheet.

CENTER POND.—Berkshire County; one-half mile north of Becket Center; a long narrow pond discharging by a stream flowing northeastward 2 miles into West Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket sheet.

CHADWICK POND.—Essex County; one-half mile west of Dead Hill and about 1½ miles south of Bradford; inlets, two small streams flowing in from the west; outlet, a stream 1 mile long to Johnsons Pond (tributary through an unnamed pond and stream to the Merrimack); altitude, 100 feet above sea level. Lawrence sheet.

CHAFFIN POND.—Worcester County, 1 mile north of Winter Hill and about 5 miles north of Worcester; several small inflowing streams; outlet stream flows in general northward about 2 miles into Quinapoxet River (tributary to Wachusett Reservoir); altitude 750 feet above sea level. Worcester sheet.

CHANDLER POND.—Suffolk County; one-half mile north Chestnut Hill Reservoir; inlet from Strongs Pond; outlet, a stream flowing northward into Charles River. Boston sheet.

CHAPIN POND.—Hampden County; a small pond 1 mile east of north from Ludlow and 1½ miles north of Chicopee River (tributary to the Connecticut). Palmer sheet.

CHAPPAQUONSETT POND.—Dukes County; Marthas Vineyard; west of Vineyard Haven; a long narrow pond connected with Vineyard Sound by a short channel. Marthas Vineyard sheet.

CHARGE POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

CHARLES BROOK.—Hampden County; town of Brimfield; a stream less than a mile long flowing eastward into Hollow Brook at the head of Mill Brook (tributary through Quinebaug River to Shetucket River and through Thames River to Long Island Sound.) Brookfield sheet.

CHARLES RIVER.—Middlesex, Worcester, Norfolk, and Suffolk counties; rises in the town of Hopkinton, Middlesex County, at altitude 400 feet above sea level; flows southward about 9 miles through Cedar Swamp Pond, Factory, and several other ponds unnamed on the map; then takes a very irregular course northeastward for 27 miles to a point 2 miles east of Natick, where it drains Waban Lake, Morses, Jennings, Mud, and Pickerel ponds; then flows generally east 12 miles, passing around Dedhams Island and continuing northwestward about 12 miles to Auburndale, where it expands into a pond or natural reservoir which is joined by a small stream from Cambridge Reservoir. It then flows eastward about 14 miles into Boston Bay; total length, following the meanderings, about 75 miles; total drainage area about 290 square miles; drainage area above Waban Lake, 156.3 square miles. Distributed along the river are 26 dams [1] aggregating in height 202 feet which furnish water power for numerous factories and mills. Principal tributaries, Mine and Sheppards brooks, Stop River, Bogastow, Stony, and Beaver brooks. Blackstone, Franklin, Framingham, and Boston sheets.

CHARLEY BROOK.—Bristol County; town of Attleboro; rises near Briggs Corner; flows in general northeastward into Wading River (tributary through Threemile River to Taunton River and thus to Narragansett Bay); length, about 4 miles. Taunton sheet.

CHARLTON RESERVOIR.—South; Worcester County; town of Charlton; village of South Charlton; two inflowing streams, one of which drains Gore Pond; outlet, a stream flowing southeastward 1 mile, then northeastward 2 miles into Little River (tributary through French River to Quinebaug River and thus through Shetucket and Thames rivers to Long Island Sound) near Buffumville. The reservoir is about 2 miles long and one-eighth mile wide. Webster sheet.

CHASE GARDEN CREEK.—Barnstable County; town of Yarmouth; a tidal channel in the marsh northeast of Yarmouth Port. Yarmouth sheet.

CHAUBUNAGUNGAMAUG LAKE.—Worcester County, town of Webster; the small inflowing streams include Sucker Brook and Browns Brook; outlet, Mill Brook to French River (tributary through Quinebaug River to Shetucket River and thus through

[1] Clapp, F. G., Geological history of the Charles River: Tech. Quart., vol. 14, Nos. 3 and 4, pp. 171-269, 1901.

Thames River to Long Island Sound). The lake is 2½ miles long, more than a mile in maximum width, is very irregular in outline, and contains a number of small islands. Webster sheet.

CHAUNCEY POND.—Worcester County; 1½ miles north of Westboro; outlet northward to Little Chauncey and Bartlett ponds by way of Stirrup Brook (tributary to Assabet River and thus through Concord River to the Merrimack); about one-half mile wide and long; altitude about 480 feet. Marlboro sheet.

CHEBACCO LAKE.—Essex County; 4 miles south of Ipswich; 3 miles northwest of Manchester; inlets, streams from Round and Beck ponds; outlet, Essex River to the Atlantic; length, about 1 mile; maximum width, about one-half mile. Salem sheet.

CHEESBORO CREEK.—Berkshire County; town of Adams; a stream about a mile long flowing northwestward into Hoosic River (tributary to the Hudson) 3 miles south of North Adams. Greylock sheet.

CHELSEA CREEK.—Middlesex County; a tidewater channel between Chelsea and East Boston and extending from Revere and Beachmont to the mouth of Mystic River. Boston and Boston Bay sheets.

CHENE BROOK.—Franklin County; rises a mile west of Tullyville; flows east of south 3 miles to its junction with West Brook (tributary through Millers River to the Connecticut). Warwick sheet.

CHERRY BROOK.—Middlesex County; rises in the marsh 1 mile west of the village of Weston; flows northward 1½ miles, then south of east 1 mile into Stony Brook (tributary to Charles River). Framingham sheet.

CHESTNUT HILL RESERVOIR.—Suffolk County; north of Chestnut Hill; a part of metropolitan district water supply. Boston sheet.

CHICKLEY RIVER.—Berkshire and Franklin counties; rises in the town of Savoy; flows southeastward 4 miles, then northeastward 6 miles to its junction with Deerfield River (tributary to the Connecticut) west of Charlemont; principal tributaries, Fuller and King brooks. Greylock and Hawley sheets.

CHICOPEE BROOK.—Hampden County; rises in a small pond southeast of Peaked Mountain; flows northerly through the town of Monson into Quaboag River (tributary through Chicopee River to the Connecticut) near Palmer; length, about 8 miles. Name obtained from Tenth Census Report, volume 16, 1885, page 270-not named on the Palmer sheet, on which it is shown.

CHICOPEE RIVER.—Franklin, Hampshire, Hampden, and Worcester counties; formed near Three Rivers in Hampden County by the union of Ware and Quaboag rivers; Ware River, which drains the larger area and is therefore considered the continuation of the main stream, is formed at Barre Falls by the union of two branches; the eastern or main branch rises in the town of Westminster, in Worcester County, about a mile east of the head of the western branch, flows southwesterly 10 miles to its confluence with Long Meadow Brook, then turns abruptly and flows northwestward to Barre Falls; the course of the western branch is also southwesterly to the point of junction; from Barre Falls the Ware flows southwesterly by a general course to Three Rivers; Swift River enters about a mile above Three Rivers, and Quaboag River at Three Rivers. Below the mouth of the Quaboag the Chicopee flows in general south of west to the city of Chicopee, where it enters the Connecticut. The distance from the mouth of the Chicopee to the head of the eastern branch of Ware River is 60 miles and the drainage area comprises 726 square miles, divided as follows:

	Square miles.
Ware River at Three Rivers	221
Swift River at mouth	213
Quaboag River at mouth	210
Chicopee River below Three Rivers	77

Average slope of river, 15 feet or more per mile. Principal tributaries of the Ware above the mouth of Swift River: Burnshirt and Prince rivers, and Moose, Danforth, Muddy, Flat, and Beaver brooks, all from the north; the only tributary from the south draining any considerable area is Long Meadow Brook, in the town of Rutland. Below Three Rivers the principal tributaries of the Chicopee are Broad, Twelvemile, Higher, and Field brooks.

The drainage basin is hilly and contains many lakes and ponds, and the flow of the stream is well sustained throughout the summer. Gaging stations: Ware River at Ware, 1904–10; Ware River at Gibbs Crossing, 1912–1915; Burnshirt River near Templeton, 1909–1910; Swift River at West Ware, 1910–1915; Quaboag River at West Warren, 1904–1907; Quaboag River at West Brimfield, 1909–1915. Maps of basin: Warwick, Winchendon, Fitchburg, Worcester, Barre, Belchertown, Webster, Brookfield, Palmer, and Springfield sheets. *See also* pages 117–149 of this report.

Childs Brook.—Hampshire County; rises in the central part of the town of Cummington; flows southeastward 3 miles into Bronson Brook, the head of West Branch (tributary through Westfield River to the Connecticut). Chesterfield sheet.

Childs River.—Barnstable County; rises in John Pond; flows southward into Waquoit Bay and thus to Nantucket Sound; length to head of the bay, about 4 miles. Falmouth sheet.

Chilmark Pond.—Dukes County; Marthas Vineyard; the most western of a group of connected ponds on the south shore of the island; it receives at its western end three small streams. Gayhead and Marthas Vineyard sheets.

Chockalog Pond.—Worcester County; a very small pond 4 miles southeast of East Douglas. Blackstone sheet.

City Brook.—Berkshire County; town of Mount Washington; head of Bashbish Brook (tributary through Rocliff Jansen Kill to the Hudson). Sheffield sheet.

Clam Pudding Pond.—Plymouth County; town of Plymouth; 1 mile southeast of Telegraph Hill. Plymouth sheet.

Clam River.—Berkshire County; rises in the town of Otis; southeast of Kingsbury Mountain; flows southeastward 10 miles to a point three-fourths mile below New Boston, where it joins the Farmington River (tributary to the Connecticut); principal tributary, Buck River. Sandisfield sheet.

Clamshell Pond.—Worcester County; a small pond on North Brook (tributary through Assabet River to Concord River and thus to the Merrimack) about one-half mile from its source and 1 mile south of Clinton; altitude, 360 feet above sea level. Marlboro sheet.

Clapp Pond.—Berkshire County; town of Washington; 2 miles west of the village of Washington; principal inlet, Roaring Brook; outlet, Roaring Brook to Housatonic River; one-half mile long; one-eighth mile wide. Becket sheet.

Clapps Pond.—Barnstable County; in the marsh 1 mile west of Provincetown. Provincetown sheet.

Clapps Round Pond.—Barnstable County; one of a group of ponds northwest of Provincetown. Provincetown sheet.

Clark Brook.—Franklin County; town of Buckland; rises a mile southwest of Moonshine Hill; flows northward 4 miles into Clesson Brook (tributary through Deerfield River to the Connecticut) half a mile above its mouth. Hawley sheet.

Clark Reservoir.—Worcester County; one-half mile east of Sutton; inlet, head of Cold Spring Brook; outlet, Cold Spring Brook to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay). Webster and Blackstone sheets.

Clay Pit Brook.—Middlesex County; a stream 2½ miles long rising northwest of Lowell and flowing southward and eastward into Merrimack River one-half mile southwest of Pawtucketville. Lowell sheet.

CLEAR POND.—Plymouth County; town of Plymouth; 1 mile northeast of East Carver. Plymouth sheet.

CLEAR POND.—Plymouth County; town of Carver; 2 miles northeast of the village of South Carver. Plymouth sheet.

CLEAR POND.—Plymouth County; 1½ miles southwest of Middleboro. Middleboro sheet.

CLEAR POND.—Plymouth County; town of Carver; a small pond 1 mile south of South Carver. Plymouth sheet.

CLEAR RUN BROOK.—Bristol County; towns of Seekonk and Rehoboth; rises about a mile east of the village of Seekonk; flows southeastward 1 mile, then east and northeast 1½ miles into Palmer River (tributary through Warren River to Narragansett Bay). Providence sheet.

CLEMATIS BROOK.—Middlesex County; formed by two branches, one of which rises west of Independence Hill and the other west of Arlington Heights; the branches unite in the marsh west of Wellington Hill and flow southeastward to Waverly, and thence southwestward to junction with Beaver Brook (tributary to Charles River) near Waltham; length to head of longest branch, about 5 miles. Boston sheet.

CLESSON BROOK.—Franklin County; rises near the village of Hawley; flows northeastward 2½ miles, southeastward 2 miles, then by a very abrupt turn northeastward again 4 miles to its junction with Deerfield River (tributary to the Connecticut); principal tributaries, Cooleys, Ruddock, Shepherd, and Clark brooks. Hawley sheet.

CLEW POND.—Plymouth County; town of Plymouth; 1½ miles southwest of Great South Pond. Plymouth sheet.

CLIFF POND.—Barnstable County; 2 miles west of South Orleans. One-half mile wide; three-fourths mile long. Wellfleet sheet.

COACHLACE POND.—Worcester County; a large pond with very irregular outline, shown on the Marlboro sheet, U. S. Geological Survey, on the western border of Clinton (called Clinton Mill Pond on the map), just north of Wachusett Reservoir; tributary to Nashua River and thus to the Merrimack. Marlboro sheet and map of metropolitan water district.

COBB BROOK.—Rises in the town of Princeton in the northern part of Worcester County, on the north slope of Calamint Hill, at altitude about 1,030 feet above sea level; flows southward into South Wachusett Brook (tributary through Quinapoxet Pond and River to Wachusett Reservoir); length, about 3 miles. Worcester sheet.

COBBLERS BROOK.—Essex County; rises on the north slope of Red Oak Hill, 1 mile northwest of Merrimac, at altitude about 170 feet above sea level; flows southeastward 3 miles, through the town of Merrimac, into Merrimack River at Merrimacport; fall from source to mouth, 150 feet. Haverhill and Newburyport sheets.

COBBS POND.—Barnstable County; town of Brewster; halfway between the village of Brewster and Cape Cod Bay. Wellfleet sheet.

COCASSET POND.—Norfolk County; town of Foxboro; inlet and outlet, Wading River (tributary through Threemile River to Taunton River and thus to Narragansett Bay). Franklin sheet.

COCHICHEWICK LAKE.—Essex County; 2 miles east of Lawrence and 1 mile west of West Boxford; inlets, two small streams from the south and one from the north; outlet, Cochichewick River to Merrimack River; altitude, about 120 feet above sea level; length, about 2½ miles; maximum width, 1 mile. Lawrence sheet.

COCHICHEWICK RIVER.—Essex County; rises in Cochichewick Lake, one-half mile southeast of North Andover and 2 miles east of South Lawrence, at altitude 100 feet above sea level; flows northwestward 1½ miles along the northeast edge of North Andover, passing through three small ponds and discharging into Merrimack River opposite the city of Lawrence. Lawrence sheet.

COCHITUATE, LAKE.—Middlesex County; 3 miles east of Framingham in the Sudbury drainage basin; altitude, 134 feet above sea level; one of the reservoirs of the storage system of the metropolitan district of Boston and vicinity; capacity, 2,328,300,000 gallons. Framingham sheet.

COCHRAN POND.—Hampden County; town of Blandford; a very small pond discharging by a stream flowing southeastward to Freeland Brook (tributary through Black Brook to Westfield River and thus to the Connecticut). Granville sheet.

CODDINGS BROOK. *See* Greenwater Pond.

COHASSE BROOK.—Worcester County; town of Southbridge; rises in the northwestern part of the town of Woodstock, Windham County, Conn.; flows southeastward about a mile, thence northeastward 5 miles to its junction with Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at the city of Southbridge. Brookfield sheet.

COLCHESTER BROOK.—Plymouth County; town of Plympton; rises about a mile east of the village of Plympton; flows in general north of west 5 miles into Wenatuxet River (tributary through Taunton River to Narragansett Bay) near South Halifax. Middleboro sheet.

COLD BROOK.—Middlesex County; rises near North Sudbury at altitude of 180 feet above sea level; flows southeastward 2½ miles to its junction with Pantry Brook (tributary through Sudbury River to Concord River and thus to the Merrimack). Framingham sheet.

COLD HARBOR BROOK.—Worcester County; rises 3 miles north of Shrewsbury; take a circuitous but in general easterly course to its junction with Assabet River (tributary through Concord River to the Merrimack) at Northboro; distance from source to mouth in a straight line about 4 miles; along the course of the stream, 8 miles; principal tributaries, stream from Rocky Pond, and Howard Brook. Marlboro sheet.

COLD RIVER.—Berkshire and Franklin counties; rises on the east slope of the Hoosac Range in the northern part of the town of Florida; flows west of south 2 miles, southeastward 5 miles, then in general eastward 4 miles to its junction with Deerfield River (tributary to the Connecticut) a mile south of Zoar; principal tributaries, Tower, Gulf, Tanner, and Manning brooks. Greylock and Hawley sheets.

COLD SPRING BROOK.—Middlesex County; rises about 2 miles southwest of Ayer, at altitude 260 feet above sea level; flows northeastward 2 miles into Bowers Brook (tributary through Nonacoicus Brook to Nashua River and thus to the Merrimack). Groton sheet.

COLD SPRING BROOK.—Worcester County; rises 1 mile southwest of the village of Sutton; flows northeastward through Clark Reservoir and Pleasantdale Pond into Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay) near Wilkinsonville; length, about 4 miles. Webster and Blackstone sheets.

COLES BROOK.—Berkshire, Hampshire, and Hampden counties; rises in Benson Pond, in the town of Washington; flows southeastward 5½ miles to its junction with West Branch of Westfield River (tributary through Westfield River to the Connecticut) 1 mile northwest of Bancroft. Becket sheet.

COLES RIVER.—Bristol County; rises in the town of Dighton, flows west of south into Mount Hope Bay, Taunton River (tributary to Narragansett Bay); length, about 10 miles; tidal in lower course. Taunton and Fall River sheets.

COLLEGE POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the west-central part of the township. Plymouth sheet.

CONCORD RIVER.—Middlesex County; formed in the town of Concord by the junction of Sudbury and Assabet rivers; Assabet River, which drains the larger area and is therefore considered the continuation of the main stream, rises on the south slope of Green Hill, 4 miles southwest of Westboro, at altitude 360 feet above sea level; flows northeastward about 30 miles to its junction with Sudbury River. Below the junction Concord River flows northeastward 9 miles, then northward 7 miles to its junction with Merrimack River at Lowell.

Assabet River drains a hilly and broken country and has a rapid fall and high banks. The basin of the Concord is also hilly and rolling near the mouth of the stream, its bed being rocky, the banks high, and the fall large, but from North Billerica the stream flows mostly through swamps and meadow lands and is exceedingly sluggish, its course very circuitous, and the bed sand and mud. Power is developed on the Concord near Lowell, where it has a fall of about 47 feet from the top of the Wamesit Dam, under normal conditions of flow. (*See* pp. 284–294 of this report for records of flow.) Principal tributaries of the Concord below the junction of Assabet and Sudbury rivers, Page Brook and River Meadow Brook. Marlboro, Framingham and Lowell sheets.

CONE BROOK.—Berkshire County; rises on Perry Peak in the northwestern part of the town of Richmond; flows southeastward 2 miles, then in general southerly 4 miles into Shaker Mill Pond on Williams River (tributary to the Housatonic). Pittsfield sheet.

CONGAMUCK PONDS.—Hampden County; town of Southwick; a group of four long, narrow ponds connected by short channels; the Massachusetts-Connecticut boundary follows the eastern shore of the south and middle ponds; outlet, Great Brook to Westfield River (tributary to the Connecticut). The total length of the ponds is about 2½ miles; maximum width, less than one-half mile. Granville sheet.

CONNECTICUT RIVER.—Rises in Connecticut lakes in northern New Hampshire; flows southward between New Hampshire and Vermont and across Massachusetts and Connecticut into Long Island Sound; length about 345 miles; drainage area, 11,300 square miles, of which 2,720 square miles is in Massachusetts; principal tributaries, Passumpsic, Ammonoosuc, Wells, White, Mascoma, Ottaqueechee, Sugar, West, and Ashuelot rivers, which join the main stream north of the Massachusetts line, Millers, Deerfield, Chicopee, and Westfield Rivers, which enter in the State of Massachusetts, and Farmington River, which enters near Hartford, Conn.; fall from Connecticut lakes to Long Island Sound, about 1,900 feet; mean annual precipitation in valley, about 40 inches, ranging from 35 inches in the extreme upper portion to 45 inches at Hartford. Gaging stations at Holyoke (1880–1899), Sunderland (1904–1915), Orford, N. H. (1900–1915). The following topographic sheets show the area drained by Connecticut River in Massachusetts: Wilmington and Brattleboro, Vt., Keene and Monadnock, N. H., Hawley and Greenfield, Vt.-Mass.; Warwick, Winchendon, and Fitchburg, N. H.-Mass., Chesterfield, Northampton, Belchertown, Barre, and Worcester, Mass., Granville, Springfield, Palmer, Brookfield, and Webster, Mass.-Conn. *See* Report on Water Power of the United States, Tenth Census, vol. 16, pp. 46–135, 1885; *also* pages 40–81 of this report.

CONTENT BROOK.—Middlesex County; rises in Long Pond in the town of Tewksbury, about 1½ miles south of Tewksbury Center; at altitude about 100 feet above sea level; flows southeastward 1½ miles through a marsh and small pond, then generally north of east 1½ miles into Shawsheen River (tributary to the Merrimack) about 1 mile east of Pattonville. A tributary of Content Brook along the south side of the marsh connects with a stream flowing westward into Concord River. Content Brook is also marshy near its mouth. Lowell and Lawrence sheets.

Cook Pond.—Bristol County south of the city of Fall River; discharges by a stream passing through Globe Mill Pond under Laurel Lake Mill and Globe yarn mills, and then crossing Bay Street near Sprague, reaches tidewater between Shaw and Middle Streets. Except at extreme high water, when the water from Cook Pond backs through the swamps to the east and reaches South Watuppa Pond by means of Sucker Brook, this pond has no direct connection with the Watuppa ponds. *See* Report of Reservoir Commission to the city council of Fall River, Mass., July, 1902. Fall River sheet, U. S. GeologicalSurvey.

Cooks Pond.—Plymouth County; town of Plymouth; three-fourths mile southeast of Billington Sea. Plymouth sheet.

Cooleys Brook.—Franklin County; a stream about 1½ miles long, flowing southeastward into Clesson Brook (tributary through Deerfield River to the Connecticut). Hawley sheet.

Coonemosset Pond.—Barnstable County; town of Falmouth; outlet, a stream flowing southward into Great Pond and thus to Vineyard Sound. Falmouth sheet.

Coopers Pond.—Plymouth County; town of Carver; a small pond south of the village of North Carver. Middleboro sheet.

Copaum Pond.—Nantucket County; Nantucket Island; north shore; 2 miles northwest of the city of Nantucket; connected with the sound by a channel less than one-eighth mile long. Nantucket sheet.

Copecut River.—Bristol County; rises 3 miles northeast of Copecut Hill in the town of Fall River; flows southerly to its junction with Shingle Island River (tributary to East Branch of Westport River, and thus through Westport Harbor to the ocean) about a mile southeast of Hicksville; length, about 5 miles. Fall River sheet.

Coskata Pond.—Nantucket County; Nantucket Island; on the Coatue sandbar; separated from the ocean on the east and from the bay known as Head of the Harbor on the south by bars about an eighth of a mile wide. Nantucket sheet.

Cotley River.—Bristol County; town of Taunton; rises a mile southwest of village of Lakeville; flows westward 2½ miles, then northward 3 miles into Taunton River (tributary to Narragansett Bay) 1 mile west of East Taunton. Taunton sheet.

Cotuit Ponds.—Barnstable County; town of Barnstable; three large ponds, the center one connects on the west with a stream flowing southeastward into Great Bay at the head of Osterville Harbor, on Nantucket Sound. Barnstable sheet.

Cotuit River.—Barnstable County; rises in Santuit Pond a mile north of the village of Cotuit, and flows southward and southwestward into an arm of Poponesset Bay, Nantucket Sound; length, about 4 miles. Barnstable sheet.

Couch Brook.—Franklin County; rises in the town of Leyden, a mile north of Frizzell Hill; flows south of east 2½ miles into Falls River (tributary to the Connecticut). Greenfield sheet.

Cowesett Brook.—*See* Town River.

Cow Pond Brook.—Middlesex County; rises 2 miles northeast of Ayer on the north slope of Snake Hill; flows northeastward through Cow Pond Meadows and Cow Pond into Upper Massapoag Pond (tributary through Salmon Brook to the Merrimack; length, 5 miles; principal tributaries above Cow Pond, Martins Pond Brook and Baddacook Brook. Groton sheet.

Cow Pond.—Middlesex County; 2½ miles east of Groton; inlet, Cow Pond Brook from Cow Pond Meadows, and Baddacook Brook from Baddacook Pond; outlet, Cow Pond Brook to Massapoag ponds and thus through Salmon Brook to the Merrimack; altitude, about 200 feet above sea level. Groton sheet.

Cows Creek.—Barnstable County; town of Sandwich; a channel in the marsh back of Spring Hill Beach; connects with Long Creek. Barnstable sheet.

COYS BROOK.—Worcester County; rises 2 miles northwest of North Brookfield; flows southwesterly to Quaboag River (tributary through Chicopee River to the Connecticut) at West Brookfield; length, 6 miles. Barre and Brookfield sheets.

COYS POND.—Essex County; 2½ miles northwest of Manchester; outlet, a small stream to Round Pond and thus through another small stream to Chebacco Lake and Essex River; altitude, 60 feet above sea level; length, about one-half mile; maximum width, less than one-fourth mile. Salem sheet.

CRANBERRY MEADOW POND.—Worcester County; town of Spencer; outlet, Cranberry River to East Brookfield River and thus through Quaboag River to Chicopee River and the Connecticut. Brookfield sheet.

CRANBERRY POND.—Franklin County; 1 mile northeast of Mount Toby; outlet, Cranberry Pond Brook to Connecticut River. Greenfield sheet.

CRANBERRY POND.—Hampden County; southeastern part of the town of Tolland; outlet, Slocum Brook to Farmington River (tributary to the Connecticut); small. Sandisfield sheet.

CRANBERRY POND.—Norfolk County; town of Braintree; outlet, a stream about 2 miles long flowing northwestward into the southern branch of Weymouth Fore River. Abington sheet.

CRANBERRY POND.—Plymouth County; town of Duxbury; inlet and outlet, South River (tributary to Massachusetts Bay). Duxbury sheet.

CRANBERRY POND.—Plymouth County; town of Lakeville; between the southern end of Assawompsett Pond and Pocksha Pond. Middleboro sheet.

CRANBERRY POND.—Worcester County; town of Lancaster; about one-half mile west of Nashua River; very small. Groton sheet.

CRANBERRY POND BROOK.—Franklin County; rises on the northeastern slope of Mount Toby; flows northeastward 1 mile to Cranberry Pond, northwesterly about 2 miles, then southwesterly one-half mile into Connecticut River. Northampton and Greenfield sheets.

CRANBERRY RIVER.—Worcester County; town of Spencer; rises in Cranberry Meadow Pond; flows northward 2 miles, then northwestward 1 mile into the pond at the head of East Brookfield River (tributary through Quaboag River to Chicopee River and thus to the Connecticut). Webster and Brookfield sheets.

CRANE BROOK.—Essex County; rises about 2 miles west of Danvers, at altitude about 90 feet above sea level; flows generally eastward 2½ miles to its junction with Beaver Brook to form Crane River (a tidewater channel tributary to Essex Branch and thus to the Atlantic Ocean at Beverly Harbor). Salem sheet.

CRANE POND.—Berkshire County; one mile northwest of West Stockbridge; outlet, a very short stream flowing northeastward into Flat Brook (the head of Williams River, which is tributary to the Housatonic). Pittsfield sheet.

CRANE RIVER.—Essex County; formed by the junction of Crane and Beaver brooks, just south of Danvers; length, 1½ miles; joins Porter and Waters rivers to form Danvers River, an arm of Beverly Harbor. One mile above its junction with Danvers River it forms a tidewater channel. Salem sheet.

CREEK BROOK.—Rockingham County, N. H., and Essex County, Mass.; rises in Rockingham County, N. H., in the town of Atkinson, at altitude about 310 feet above sea level; flows generally southward 2½ miles, passing through Creek Pond, in Essex County, Mass., then generally east of south 2 miles into Merrimack River about 2 miles west of Haverhill; fall from source to mouth, 290 feet. Haverhill sheet.

CREEK POND.—Essex County; in the town of Haverhill, 1 mile northeast of Ayers village, about 2 miles east of Spicket Hill; inlet, Creek Brook and another smaller stream, both from the north; outlet, Creek Brook to Merrimack River; altitude, about 140 feet above sea level; length, 1 mile; maximum width, one-half mile. Haverhill sheet.

CROOKED POND.—Barnstable County; town of Falmouth; one of a group of ponds lying northwest of East Falmouth. Falmouth sheet.

CROOKED POND.—Essex County; 1½ miles south of Boxford; outlet, a small stream to Fish Brook (tributary to Ipswich River); altitude, 140 feet above sea level; very small. Lawrence and Salem sheets.

CROOKED POND.—Hampshire County; northwestern part of the town of Plainfield; outlet through Windsor Pond to Westfield River (tributary to the Connecticut). Hawley sheet.

CROOKED POND.—Plymouth County; town of Plymouth; a small pond 2 miles southeast of Great South Pond. Plymouth sheet.

CROOKED RIVER.—Plymouth County; town of Wareham; joins Wareham River (tributary to Buzzards Bay) south of Barneys Point; tidal; about a mile long. Falmouth sheet.

CROOKED SPRING BROOK.—Middlesex County; a stream about 1½ miles long rising 2 miles northwest of Chelmsford Center and flowing northward into Stony Brook (tributary to the Merrimack) near West Chelmsford. Lowell sheet.

CROW HILL BROOK.—Worcester County; town of Templeton; a stream about 1½ miles long rising east of Church Hill and flowing northeastward into Trout Brook (tributary through Otter River to Millers River and thus to the Connecticut). Winchendon sheet.

CROWS POND.—Barnstable County; on Nickersons Neck in the town of Chatham; tidal. Chatham sheet.

CRYSTAL LAKE.—Middlesex County; at Newton Center. Boston sheet.

CRYSTAL LAKE.—Middlesex County; just south of the town of Wakefield; altitude, 100 feet above sea level. The lake, when full, has an area of 85 acres; a portion of the lake, covering about 30 acres, is very shallow; furnishes the water supply for the town of Wakefield; natural outlet by a tributary of Saugus River, which discharges into Boston Bay. Boston sheet.

CRYSTAL LAKE.—Worcester County; town of Gardner; north of the city of Gardner; used by the city as a source of water supply; the lake is more than a mile long and one-fourth mile wide; altitude, 1,100 feet above sea level. Fitchburg sheet.

CRYSTAL POND.—Middlesex County; in the city of Melrose; inlet Malden River; outlet Malden River to Mystic River; small. Also known as Ell pond. Boston sheet.

CURTIS POND.—Hampshire County; 1½ miles north of Mount Pomeroy; inlet from Warner Pond; outlet a stream one-half mile long flowing southwestward into the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown sheet.

CURTIS POND.—Worcester County; city of Worcester; principal inflowing streams, Kettle Brook and Tatnuck Brook; outlet, Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay. Webster sheet.

CUSHING POND.—Plymouth County; town of Hingham; inlet and outlet, a branch of Weir River. Abington sheet.

CUTLER POND.—Essex County; a very small pond 4 miles southwest of Ipswich River; inlet, Black Brook; outlet, Black Brook to Ipswich River. Salem sheet.

CUT RIVER.—Plymouth County; a tidal channel in Duxbury Marsh. Duxbury sheet.

CUTTYHUNK POND.—Nantucket County; Cuttyhunk Island (one of the Elizabeth Islands); tidal. Gay Head sheet.

DAMLOT BROOK.—Bristol County; town of Raynham; rises 1½ miles east of village of Raynham; flows southwesterly into Taunton River (tributary to Narragansett Bay); length, 3 miles. Taunton sheet.

DANFORTH BROOK.—Worcester County; town of Hardwick; rises 1½ miles southwest of Ridge Hill; flows west of south 6 miles into Ware River (tributary through Chicopee River to the Connecticut) at Gilbertville. Barre sheet.

DANIELS BROOK.—Berkshire County; rises in the town of Lanesboro; flows southeastward 3½ miles to Pittsfield, where it enters the northern arm of Lake Onota; outlet, Onota Brook to west branch of Housatonic River (tributary to the Housatonic). Berlin and Pittsfield sheets.

DANVERS RIVER.—Essex County; a tidewater channel formed by the junction of Porter, Crane, and Waters rivers; length about 1½ miles to the Atlantic Ocean at Beverly Harbor; it is joined at its mouth by Bass River from the north and North River from the south. Salem sheet.

DANSONS BROOK.—Plymouth County; town of Middleboro; a stream about a mile long flowing northeastward into Bartletts Brook (tributary through Wenatuxet River to Taunton River and thus to Narrangansett Bay). Middleboro sheet.

DARBY POND.—Plymouth County; town of Plymouth; just north of East Carver. Plymouth sheet.

DARK BROOK.—Worcester County; town of Auburn; rises 1 mile northeast of Rochdale; flows southeastward 1½ miles, thence northeastward through Stoneville Reservoir to Kettle Brook (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay) near Stoneville; length, about 5 miles. Webster sheet.

DAVIS POND.—Berkshire County; a small pond northeast of Harman Marsh Pond in the northwestern part of the town of Sheffield. Sheffield sheet.

DAVIS POND.—Hampshire County; town of Greenwich; an expansion of the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut) just above the mouth of the East Branch of Swift River. Belchertown sheet.

DAY BROOK.—Berkshire County; town of Chester; rises 1 mile southwest of North Chester; flows southeasterly 3 miles, then northeastward one-half mile to Dayville, where it enters Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Chesterfield sheet.

DEACONS POND.—Barnstable County; town of Falmouth; a baylike pond connected with Vineyard Sound by a narrow channel; one-fourth mile west of Falmouth Heights. Falmouth sheet.

DEAD BRANCH.—Hampshire County; rises in the town of Goshen; flows southward into Burnell Pond; thence southeastward into East Branch (tributary through Westfield River to the Connecticut) one-half mile north of Bisbee Mill, in the town of Chesterfield. Chesterfield sheet.

DEAD POND.—Middlesex County; a small pond in the town of Townsend lying a short distance west of south from Bixby reservoir. Groton sheet.

DEAD POND.—Worcester County; town of Hardwick; a small pond in an area drained by a tributary of Muddy Brook to Ware River (tributary through Chicopee River to the Connecticut). Barre sheet.

DEAD POND.—Worcester County; one-half mile north of Shirley reservoir; outlet, a stream one-half mile long flowing southwestward into Catacoonamug Brook (tributary through Shirley reservoir to Nashua River and thus to the Merrimack). Groton sheet.

DEANS POND.—Barnstable County; town of Mashpee; 1 mile northeast of Succonesset; separated from Nantucket Sound by a narrow ridge. Barnstable sheet.

DEEP BROOK.—Middlesex County; rises 2 miles south of Tyngsboro at altitude 150 feet above sea level; flows southeastward 2½ miles and enters Merrimack River near North Chelmsford. Lowell sheet.

DEEP POND.—Barnstable County; town of Bourne; a small pond, 1½ miles southeast of the village of Bourne. Falmouth sheet.

DEEP POND.—Barnstable County; town of Falmouth; one of a group of ponds lying northwest of East Falmouth. Falmouth sheet.

DEEP POND.—Barnstable County; town of Falmouth; one-half mile southwest of the village of Hatchville. Falmouth sheet.

DEERFIELD RIVER.—Windham and Bennington counties, Vt., Berkshire and Franklin counties, Mass.; rises in the southeastern part of the town of Sunderland, Vt.; follows a general southeasterly course to its junction with the Connecticut near Greenfield, Mass.; length above the Massachusetts State line about 30 miles; below the Massachusetts line, 42 miles. Gaging stations: At Hoosac Tunnel, 1909–1913; at Charlemont, 1913–1915; at Shelburne Falls, 1907–1915; at Deerfield, 1904–5. The most important tributaries in Vermont are the East Branch, which enters at Searsburg, the North Branch, which comes in at Wilmington, and the West Branch, which joins it at Readsboro; principal tributaries in Massachusetts, Pelham Brook, Chickley River, Mill and Clesson brooks, and North, South, and Green rivers.

The basin is in large part wooded, and little land is under cultivation except along the lower stretches. Most of the slopes are steep, and elevation in the upper part of the basin exceeds 3,800 feet above sea level. Mean annual precipitation at the headwaters probably about 48 inches; in the lower part of the basin it is several inches less; average depth of snowfall in January and February at Jacksonville, Vt., about 25 inches; mean temperature for these months, about 18 degrees.

Equinox, Londonderry, Bennington, Wilmington, Hawley, and Greenfield sheets. *See also* pages 89–116 of this report.

DEER POND.—Plymouth County; town of Plymouth; in an angle on the north side of White Island Pond; very small. Plymouth sheet.

DEMONS POND.—Worcester County; town of Rutland; one mile southeast of West Rutland; three small inflowing streams; outlet, a stream 1½ miles long flowing north and west into Long Pond (outlet Long Meadow Brook to Ware River and thus through Chicopee River to the Connecticut). Worcester sheet.

DENISON LAKE.—Worcester County; town of Winchendon; 3 miles southwest of the city of Winchendon; two small inflowing streams; outlet, a stream one-fourth mile long flowing southwestward into Millers River (tributary to the Connecticut). The lake is nearly a mile long and more than one-fourth mile wide. Winchendon sheet.

DENNIS POND.—Barnstable County; town of Yarmouth; one-half mile south of Yarmouth Port. Barnstable sheet.

DEN STREAM.—Hampshire County; town of Middlefield; rises 2 miles north of the village of Middlefield; flows southeastward 3½ miles, then northeastward 1½ miles into the Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket and Chesterfield sheets.

DEVOL POND.—Bristol County; one-half mile east of and discharging into Sawdy (Sandy) Pond; outlet through Watuppa Pond and Quequechan River to Taunton River and thus to Narragansett Bay. Fall River sheet. *See also* Report of the Reservoir Commission to the city council of Fall River, Mass., July, 1902.

DICKINSON BROOK.—Head of Munn Brook (tributary through Westfield River to Westfield River and thus to the Connecticut). Granville sheet.

DIMMICK POND.—Hampden County; town of Springfield; a small pond lying half a mile southwest of Ludlow and Chicopee River (tributary to the Connecticut). Palmer sheet.

DISMAL BROOK.—Hampden County, Mass.; Hartford County, Conn.; rises on the south slope of Sodom Mountain, in the town of Southwick; flows southward 4 miles to North Granby, Conn., where it enters the North Branch of Salmon Brook (tributary through Salmon Brook to Farmington River and thus to the Connecticut). Only about a mile of the head of this stream is in Massachusetts. Granville sheet.

DOCK CREEK.—Barnstable County; town of Sandwich; a tidal channel in the marsh east of Sandwich; connects with Mill Creek. Barnstable sheet.

Doggetts Brook.—Plymouth County; town of Rochester; rises about 2 miles northwest of the village of Rochester; flows southeastward 3 miles, then north of east 1 mile into Sippicon River (tributary through Weweantic River to Buzzards Bay); principal tributary, a stream from Haskell Swamp. Middleboro and New Bedford sheets.

Dorothy Brook.—Worcester County; rises on the south slope of Oak Hill, in the city of Worcester; flows southeastward to Dorothy Pond, thence southwestward into Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay) at Millbury; called Broad Meadow Brook above Dorothy Pond; length to head of Broad Meadow Brook, 5 miles. Worcester, Webster, and Blackstone sheets.

Dorothy Pond.—Worcester County; at south base of Dorothy Hill; inlet, Broad Meadow Brook (head of Dorothy Brook); outlet, Dorothy Brook to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay). Webster and Blackstone sheets.

Double Brook.—Middlesex County; rises in Long Pond 3½ miles northwest of Lowell; flows southeastward 1½ miles into Beaver Brook (tributary to the Merrimack). Lowell sheet.

Double Brook.—Plymouth County; formed in South Purchase Swamp by the union of West Rocky Gutter and East Rocky Gutter brooks. West Rocky Gutter Brook, which drains the larger area, rises about 4 miles north of South Middleboro; flows southward 1½ miles, then southeastward and eastward through the swamp to the junction with East Meadow Brook; below this junction Double Brook flows eastward through a pond on the edge of the swamp into Weweantic River (tributary to Buzzards Bay); length to head of West Rocky Meadow Brook, about 5 miles. Middleboro sheet.

Dragon Brook.—Franklin County; town of Shelburne; rises 2½ miles northeast of Shelburne Falls; flows southward 2 miles to the village of Shelburne, then southeastward 2½ miles to its junction with Deerfield River (tributary to the Connecticut). Greenfield sheet.

Dresser Pond.—Hampshire County; town of Chesterfield; on The Branch, as the head of East Branch (tributary through Westfield River to the Connecticut) is called; about a mile long and one-fourth mile wide. Chesterfield sheet.

Drinkwater River.—Plymouth County; formed by two small streams which unite near North Hanover; flows southward into a pond on Indian Head River (tributary through North River to Massachusetts Bay); a western branch of Drinkwater River; drains the eastern part of the town of Rockland. Abington sheet.

Dry Brook.—Berkshire County; rises 2½ miles north of Windsor; flows northwestward 6 miles to Maple Grove, where it enters Hoosic River (tributary to the Hudson). Greylock sheet.

Dry Brook.—Berkshire County; town of Sheffield; rises between Race Mountain and Mount Everett; flows southeasterly 1 mile, then southerly 1 mile into Schenob Brook (tributary to the Housatonic). Sheffield sheet.

Dry Brook.—Franklin County; rises just south of the Vermont-Massachusetts boundary line between Pond Mountain and East Mountain; flows southeastward 7 miles to its junction with Connecticut River in the town of Gill. Greenfield and Warwick sheets.

Dry Brook.—Hampshire County; town of South Hadley; a stream somewhat more than a mile long, flowing southwestward into Connecticut River at Thermopylae. Northampton sheet.

Duck Creek.—Barnstable County; town of Wellfleet; a tidal channel extending from Wellfleet Harbor to the village of Wellfleet. Wellfleet sheet.

DUCK HILL RIVER, OR BACK RIVER.—Plymouth County; town of Duxbury; rises 1½ miles southwest of Duxbury station; flows in general northeastward and discharges through Duxbury Marsh into Duxbury Bay, a branch of Massachusetts Bay; length, including major windings in the marsh, about 5 miles. Duxbury sheet.

DUCK POND.—Barnstable County; a small pond in the marsh one-half mile northwest of Provincetown. Provincetown sheet.

DUCK POND.—Middlesex County; on east edge of Cow Pond Meadows, which are drained through Cow Pond Brook and Massapoag ponds to Salmon Brook, and thus to the Merrimack. Groton sheet.

DUDLEY BROOK.—Middlesex County; rises on the north slope of Nobscot Hill, 1½ miles southwest of South Sudbury, at altitude 260 feet above sea level; flows generally northward 1½ miles, then eastward one-half mile into Hop Brook (tributary through Wash Brook to Sudbury River and thus through Concord River to the Merrimack). Framingham sheet.

DUDLEY POND.—Middlesex County; one-half mile north of Cochituate, 3 miles northwest of Natick and 1 mile east of Sudbury River (tributary through Concord River to the Merrimack); altitude, 140 feet above sea level; part of the storage system of the metropolitan district of Boston and vicinity. Framingham sheet.

DUG BROOK.—Franklin County; town of Sunderland; rises 2 miles south of Mount Toby; flows southwestward to its junction with Connecticut River; length, 4 miles; principal tributary, Mohawk Brook. Northampton sheet.

DUNBAR BROOK.—Franklin County; rises in the town of Stamford, Vt., flows southeastward (as Mill Brook) across the extreme northeastern corner of Berkshire County, and enters Deerfield River (tributary to the Connecticut) 1 mile southeast of Monroe Bridge; called Mill Brook throughout upper course; length to head of Mill Brook, 6 miles. Greylock and Hawley sheets.

DUNN BROOK.—Worcester County; rises 1 mile southeast of North Brookfield; flows southward to Perry Pond, thence southwestward into Quaboag River (tributary through Chicopee River to the Connecticut) just below the outlet of Quaboag Pond; principal tributary, Moore Brook; passes through the Great Swamp east of Brookfield. Barre and Brookfield sheets.

DUNNS POND.—Worcester County; town of Auburn; 1 mile north of the village of Auburn; inlet and outlet, Ramshorn Brook (tributary to Kettle Brook and thus through Blackstone River to Seekonk and Providence rivers and Narragansett Bay). Webster sheet.

DYER POND.—Barnstable County; a small pond about a mile east of the village of Wellfleet. Wellfleet sheet.

EAGLE POND.—Barnstable County; town of Barnstable; a small pond 1 mile north of Osterville Harbor. Barnstable sheet.

EAGLE POND.—Barnstable County; 1 mile west of North Harwich. Yarmouth sheet.

EAST BRANCH.—Hampshire County; rises near the village of Goshen; flows southward through Dresser Pond, thence southwesterly to its junction with Westfield River (tributary to the Connecticut); length, 10 miles; principal tributary, Dead Branch; called The Branch between Dresser Pond and the mouth of Dead Branch. Chesterfield sheet.

EAST BROOK.—Worcester and Hampden counties; rises 1 mile northwest of Chamberlain Mountain; flows southwesterly to its junction with Mill Brook (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound) near the village of Brimfield; length, about 5 miles; principal tributary, Sessions Brook; passes through Great Pond. Brookfield sheet.

EAST BROOKFIELD RIVER.—Worcester County; the principal stream flowing into Quaboag Pond; considered the continuation of Quaboag River. *See also* Quaboag River.

East Creek.—Berkshire County, Mass.; Rensselaer County, N. Y.; rises in the northwestern part of the town of Lanesboro, Mass.; flows southwestward 5 miles into Stephentown, N. Y., then northwestward 2 miles to its junction with Kinderhook Creek (tributary to the Hudson). Berlin sheet.

East Head Pond.—Plymouth County; on boundary between towns of Carver and Plymouth; outlet, Wankinco River to Wareham River and thus to Buzzards Bay. Plymouth sheet.

East Pond.—Berkshire County; southeastern part of the town of New Marlboro, at the southern edge of Wolf Swamp; outlet, a stream one-half mile long flowing northwestward to Whiting River (tributary through Blackberry River to the Housatonic). Sandisfield sheet.

East Pond.—Hampshire County; town of Greenwich; 1 mile southwest of Greenwich village, on the East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Belchertown sheet.

East Pond.—Nantucket County; Tuckernuck Island; northeast shore; tidal. Muskeget sheet.

Edgartown Great Pond.—Dukes County; Marthas Vineyard; the largest of the series of ponds on the south shore of the island; separated from the ocean by a continuous barrier beach; the pond is very irregular in outline, its northern and eastern shores being characterized by branching coves. Marthas Vineyard sheet.

Eel Pond.—Barnstable County; town of Falmouth; a pondlike arm of Waquoit Bay extending northward about 1½ miles from a point near Menauhant. Falmouth sheet.

Eel Pond.—Dukes County; Marthas Vineyard; north of Edgartown; a tidal pond on the west side of Edgartown Harbor. Marthas Vineyard sheet.

Eel River.—Plymouth County; town of Plymouth; rises in Little South Pond, flows southward into Great South Pond, then circuitously eastward, northeastward, northward, and northwestward into the southeast end of Plymouth Harbor; length from mouth to Great Pond, 4½ miles. Plymouth sheet.

Elbow Pond.—Plymouth County; town of Plymouth; one-half mile west of Great Herring Pond. Plymouth sheet.

Elders Pond.—Plymouth County; town of Lakeville; outlet, a stream about 2 miles long flowing southward into Long Pond (tributary through Assawompsett Pond to Namasket River and thus through Taunton River to Narragansett Bay). Water used as part of the municipal supply of the city of Taunton. Middleboro sheet.

Eldridges Pond.—Barnstable County; town of Harwich; one-fourth mile south of Long Pond. Yarmouth sheet.

Ell Pond.—Middlesex County. *See* Crystal Pond.

Ellinwood Brook.—Worcester County; town of Athol; rises on High Knob south of the city of Athol; flows southwestward 1½ miles, then north of west 1 mile into White Pond (outlet to Millers River and thus to the Connecticut). Winchendon and Warwick sheets.

Ellis Pond.—Barnstable County; town of Bourne; half a mile north of the head of Little Buttermilk Bay, with which it is connected by a southwestward flowing stream. Plymouth sheet.

Ellis Pond.—Plymouth County; town of Plymouth; west of King Pond. Plymouth sheet.

Ellis River.—Worcester County; town of West Brookfield; rises on the south slope of Ragged Hill; flows southeastward 3 miles into Quaboag River (tributary through Chicopee River to the Connecticut); principal tributary, Pierce Brook. Barre and Brookfield sheets.

ELM BROOK.—Middlesex County; rises about one-half mile west of Bedford, at altitude about 120 feet above sea level; flows generally eastward 2 miles into Shawsheen River (tributary to the Merrimack) about a mile east of Bedford; marshy through much of its course. Framingham sheet.

ELMER BROOK.—Hampshire County; town of South Hadley; rises west of The Notch on the south slope of the Holyoke Range; flows southwestward 2 miles, westward 1 mile, and southward 1 mile into Bachelor Brook (tributary to the Connecticut); a number of small tributaries from the south slope of the Holyoke Range. Northampton sheet.

EMERSON BROOK.—Worcester County; town of Douglas; rises 2 miles southeast of East Douglas; flows southeastward 2 miles, northeastward 2 miles, then eastward and southeastward again 2 miles to its junction with Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay). Blackstone sheet.

ESSEX BRANCH.—*See* Danvers River.

ESSEX RIVER.—Essex County; rises in Coys Pond, 2½ miles northwest of Manchester; flows generally northeastward for about 7 miles into the Atlantic at Cross Island; passes through Round Pond and Chebacco Lake; drains Beck Pond through a small tributary; swampy throughout its course; terminates in a tidewater channel. Salem sheet.

EZEKIEL POND.—Plymouth County; town of Plymouth; one-eighth mile east of White Island Pond. Plymouth sheet.

FACTORY BROOK.—Berkshire and Hampshire counties; rises in the southern part of the town of Peru; flows east of south 8 miles through the town of Middlefield to its junction with West Branch of Westfield River (tributary through Westfield River to the Connecticut) near Bancroft. Becket sheet.

FACTORY POND.—Norfolk County; on Charles River (tributary to Boston Bay). Blackstone sheet.

FAIRHAVEN POND.—Middlesex County; 1½ miles south of Concord (inlet, Sudbury River; outlet, Sudbury River to Concord River and thus to the Merrimack); about three-fourths mile long and one-fourth mile in maximum width. Framingham sheet.

FALL BROOK.—Bristol County; town of Freetown. *See* Namasket River.

FALL BROOK.—Cheshire County, N. H., Worcester County, Mass.; rises in Wheeler Pond in the town of Richmond, N. H.; flows southeastward 3 miles into the East Branch of Tully River (tributary through Tully River to Millers River and thus to the Connecticut). Warwick and Winchendon sheets.

FALL BROOK.—Plymouth County; town of Middleboro; rises 1½ miles south of East Middleboro; flows eastward 1 mile, then southward 3 miles into Tispaquin Pond, from which it passes westward into Namasket River (tributary through Taunton River to Narragansett Bay); called Shorts Brook above Tispaquin Pond; length to head of Shorts Brook, about 8 miles; principal tributaries, Woods, Story, and Shaving brooks. Middleboro sheet.

FALL BROOK.—Worcester County; rises on the northeast slope of Rocky Hill; flows south of east 2 miles, then northeast and east about 2 miles to its junction with North Branch of Nashua River (tributary through Nashua River to the Merrimack). Fitchburg, Worcester, and Groton sheets.

FALL HILL BROOK.—Franklin County; town of Orange; a stream 1½ miles long, flowing southward into Millers River (tributary to the Connecticut) at Orange. Warwick sheet.

FALLS RIVER.—Windham County, Vt., Franklin County, Mass.; rises on the east slope of East Mountain, in the eastern part of the town of Guilford, Vt.; flows

southeasterly across Bernardston, Mass., to a point opposite Turner Falls, where it joins Connecticut River; length, 13 miles; principal tributaries, Shattuck and Couch brooks. Brattleboro and Greenfield sheets.

Fallulah Brook.—Worcester County; heads about 5 miles north of Fitchburg, at altitude 1,000 feet above sea level; flows southeastward into Baker Brook (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack); principal tributary, Scott Brook; length, about 2½ miles. Fitchburg sheet.

Farley Brook.—Middlesex County; rises one-half mile east of South Chelmsford, at altitude 180 feet above sea level; flows northeastward 1¼ miles into River Meadow Brook (tributary through Concord River to the Merrimack). Lowell sheet.

Farmington River.—East Branch; Hampden County, Mass., Hartford County, Conn.; formed in the southwestern part of the town of Granville, Mass., by the union of Pond and Hubbard brooks. Hubbard Brook, considered the continuation of the East Branch of the Farmington, rises on the south slope of Barnes Mountain, in the town of Tolland, and flows southeasterly about 6 miles; below the mouth of Pond Brook the East Branch of the Farmington flows southward 13 miles to New Hartford, Conn., where it unites with the Farmington River (tributary to the Connecticut). In addition to Hubbard Brook the principal tributaries of the East Branch of the Farmington in Massachusetts are Pond and Valley brooks. Granville and Granby sheets.

Farmington River.—Massachusetts-Connecticut; heads in the town of Becket, near Becket Mountain, in Berkshire County; flows southerly and southeasterly along the boundary between Berkshire and Hampden counties, Mass., crosses the northeastern part of Litchfield County, Conn., and passes into Hartford County; below New Hartford the southeasterly course is continuous to Farmington, where the stream turns abruptly and flows northeastward to Tariffville. From Tariffville the general course is again southeasterly to Windsor, where the stream enters the Connecticut; length from source in Becket to the Connecticut, about 75 miles; drainage basin, 584 square miles. Above Colebrook, where the stream enters the Connecticut, length is about 30 miles and the fall 700 feet. Total drainage area in Massachusetts, 103 square miles, of which 92.7 square miles lies above the gaging station 1 mile below New Boston; largest tributary in Massachusetts, Clam River. The basin contains numerous small lakes and ponds, is fairly well wooded, and a number of small power sites have been partly developed; flow affected by operation of Otis reservoir. Gaging station near New Boston, 1913–1915. Maps of basin of West Branch, Becket, Sandisfield, Winsted, and Granby sheets. *See* Water Powers of the United States, Tenth Census, vol. 16, p. 240; also pp. 181–185 of this report.

Farm Pond.—Dukes County; Marthas Vineyard; south of Cottage City; separated from the Sound by a narrow beach. Marthas Vineyard sheet.

Farm Pond.—Middlesex County; a pond at South Framingham; altitude, 149 feet above sea level; part of the storage system of the metropolitan district of Boston and vicinity; connected by aqueduct with reservoirs 1 and 2 of the system. *See* Sudbury River. Framingham sheet.

Farm Pond.—Middlesex County; 1 mile southeast of Sherborn; outlet, a stream three-fourths mile long flowing north of east into Charles River. Franklin sheet.

Fawn Lake.—Middlesex County; near Billerica Springs station, about 1½ miles north of Bedford; outlet, Spring Brook (tributary through Shawsheen River to the Merrimack); altitude, about 180 feet above sea level; very small. Lowell sheet.

Fawn Pond.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

FEARINGS POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

FEDERAL POND.—Plymouth County; on line between towns of Plymouth and Carver; outlet, a stream about a mile long, flowing southwestward into a pond on Sampson Brook (tributary through Weweantic River to Buzzards Bay); a large pond of very irregular outline. Plymouth sheet.

FENTON BROOK.—Berkshire County; southern part of the town of Egremont; rises on Mount Bushnell; flows northwestward 1½ miles, thence northeastward one-half mile into Karner Brook (the head of Hubbard Brook, which is tributary through Schenob Brook to the Housatonic). Sheffield sheet.

FEVER BROOK.—WEST BRANCH; Worcester County; rises in the western part of the town of Petersham; flows southwestward about 4 miles to the west base of Rattlesnake Hill, where it joins East Branch to form Fever Brook (tributary through Middle Branch or head of Swift River to Ware River and thus through Chicopee River to the Connecticut). Belchertown sheet.

FEVER BROOK.—Worcester County; towns of Petersham and Dana; formed by two branches. The East Branch, considered the head of the brook, flows from the reservoir in the northern part of the town of Petersham, southwestward to the south base of Rattlesnake Hill where it turns abruptly and flows northwestward 1 mile to its junction with the West Branch. Below this junction Fever Brook flows southwestward somewhat more than a mile into the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut) south of North Dana. Winchendon, Barre, and Belchertown sheets.

FIELD BROOK.—Hampden County; town of Chicopee; rises 2 miles north of Indian Orchard; flows southwestward 4½ miles into Chicopee River (tributary to the Connecticut) a mile east of Chicopee Falls. Springfield sheet.

FIFE BROOK.—Berkshire County; rises in the extreme southwestern part of the town of Monroe, in Franklin County; flows southeastward 2½ miles into Deerfield River (tributary to the Connecticut). Hawley and Greylock sheets.

FIRST BROOK.—Franklin County; town of Buckland; a stream about a mile long flowing northward into Deerfield River (tributary to the Connecticut). Hawley sheet.

FIRST BROOK.—Franklin County; town of Whately; a stream about a mile long flowing eastward into Connecticut River. Northampton sheet.

FIRST BROOK.—Plymouth County; town of Kingston: a stream about one-half mile long flowing northwestward into Jones River (tributary through Kingston Bay to Massachusetts Bay), one-fourth mile below mouth of Second Brook. Plymouth sheet.

FIRST HERRING BROOK.—Plymouth County; rises one-half mile northeast of Black Pond Hill; flows eastward and southeastward into North River in the tidal marsh above its mouth; length, about 5 miles. Abington and Duxbury sheets.

FISH BROOK.—Essex County; rises about a mile east of Andover, at altitude 240 feet above sea level; takes a general course southeastward for 10 miles into Ipswich River; head of stream is called Mosquito Brook on the map; marshy throughout much of its course. Lawrence and Salem sheets.

FISH BROOK.—Essex County; rises in Haggetts Pond, 3 miles southwest of South Lawrence, at altitude 120 feet above sea level; flows northwestward about 3 miles into Merrimack River. Lawrence sheet.

FISHING RIVER.—Rockingham County, N. H., Essex County, Mass.; rises in the town of Plaistow in Rockingham County, N. H., at altitude about 160 feet above sea level; flows southwestward 3 miles into Little River (tributary to the Merrimack). Haverhill sheet.

FISH POND.—Plymouth County; town of Plymouth; 2 miles southeast of the city of Plymouth; outlet, a stream one-half mile long flowing southeastward into Mill Pond on Eel River (tributary to Plymouth Harbor). Plymouth sheet.

FITCH POND.—Worcester County; 2 miles west of Clinton; one inflowing stream; outlet of stream 2 miles long, flowing southeast and north of east into Coachlace Pond (Clinton Mill Pond), tributary to Nashua River and thus to the Merrimack. Marlboro sheet.

FIVEMILE POND.—Hampden County; about a mile south of Chicopee River at Indian Orchard. Springfield sheet.

FIVEMILE POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

FIVEMILE RIVER.—Worcester County; rises 1½ miles north of Oakham; flows southeastward 1½ miles, thence somewhat west of south to its junction with East Brookfield River (tributary through Quaboag River to Chicopee River and thus to the Connecticut) at East Brookfield; passes through Brooks Pond and Furnace Pond; length, 11 miles; principal tributaries, Maynard and Horse Pond brooks. Barre and Brookfield sheets.

FLAG BROOK.—Worcester County; rises 1 mile northeast of Wachusett Pond, at altitude about 1,000 feet above sea level; flows northeastward about 1½ miles into a small lake on the stream connecting Grass Pond with Whitman River (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack). Fitchburg sheet.

FLAG MEADOW BROOK.—Middlesex County; a stream 1 mile long flowing southward into Merrimack River near Pawtucketville. Lowell sheet.

FLAT BROOK.—Columbia County, N. Y., Berkshire County, Mass.; head of Williams River (tributary to the Housatonic). *See* Williams River.

FLAT BROOK.—Worcester and Hampshire counties; rises in the southwestern part of the town of Hardwick in Worcester County; flows southward 5 miles into Ware River (tributary through Chicopee River to the Connecticut) in the town of Ware. Belchertown and Palmer sheets.

FLAT POND.—Barnstable County; town of Mashpee; 1 mile west of Succonesset; marshy. Barnstable sheet.

FLAT POND.—Barnstable County; 2½ miles southwest of the village of Orleans. Wellfleet sheet.

FLAT POND.—Middlesex County; 1½ miles southeast of Townsend Harbor; two small inlets; outlet, a stream 1 mile long flowing southwestward into Squannacook River (tributary through Nashua River to the Merrimack). Groton sheet.

FLAX POND.—Barnstable County; town of Bourne; a mile southeast of North Pocasset; marshy. Falmouth sheet.

FLAX POND.—Barnstable County; town of Dennis; 2 miles south of Scargo Lake. Yarmouth sheet.

FLAX POND.—Barnstable County; town of Harwich; one-half mile northwest of Harwich station; outlet, a stream flowing southwestward into a branch of Herring River (tributary to Nantucket Sound) in the marsh northeast of West Harwich. Yarmouth sheet.

FLAX POND.—Barnstable County; town of Yarmouth; a small pond 1¼ miles north of South Yarmouth; connected with Lilly Pond by a marsh. Yarmouth sheet.

FLAX POND.—Barnstable County; town of Yarmouth; 1 mile north of West Yarmouth. Yarmouth sheet.

FLAX POND.—Plymouth County; town of Wareham; a small pond lying between Agawam River and Spectacle Pond just north of Agawam. Plymouth sheet.

FLINTS POND.—Worcester County; west of North Grafton; an expansion of Quinsigamond River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); just below the outlet of Lake Quinsigamond. Blackstone sheet.

Flora Glen Brook.—Berkshire County; town of Williamstown; a stream 1½ miles long, flowing eastward into Hemlock Brook (tributary through Hoosic River to the Hudson); a mile southwest of the city of Williamstown. Greylock sheet.

Flushing Pond.—Middlesex County; 2 miles west of West Chelmsford at southeast base of Flushing Hill; outlet, a stream one-half mile long flowing southeastward into Nabnasset Pond (tributary through Gilsons Brook to Stony Brook and thus to the Merrimack). Lowell sheet.

Follins Pond.—Barnstable County; 2 miles northwest of South Dennis; on Bass River (tributary to Nantucket Sound). Yarmouth sheet.

Folsom Pond.—Middlesex County; 1½ miles northeast of Wayland; outlet, a stream 2 miles long flowing generally southwestward into Hayward Brook (tributary to Sudbury River and thus through Concord River to the Merrimack); swampy throughout lower part of its course; altitude, about 140 feet above sea level; very small. Framingham sheet.

Ford Glen Brook.—Berkshire County; town of Williamstown; rises a mile southwest of Northwest Hill; flows southeastward a mile, northeastward one-half mile into Hemlock Brook (tributary through Hoosic River to the Hudson) just above its mouth. Greylock sheet.

Forest Pond.—Essex County; just west of Middleton; inlets, two marshy streams entering from the west; outlet, a stream flowing eastward into Ipswich River; altitude about 100 feet above sea level; length, about three-fourths mile; maximum width, about one-fourth mile. Lawrence sheet.

Forest Pond.—Hampden County; town of Palmer; east of Ware River (tributary through Chicopee River to the Connecticut) with which it is connected; two inflowing streams, one of which drains Calkins Pond; connected with Pattaquattic Pond. Palmer sheet.

Forest River.—Essex County; a tidewater channel 2 miles west of Marblehead. Salem sheet.

Forge Pond.—Bristol County; town of Raynham; an expansion of Pine Swamp Brook (tributary through Taunton River to Narragansett Bay); southwest of the village of Raynham. Taunton sheet.

Forge Pond.—Hampshire County; town of Granby; several small inflowing streams; outlet, Bachelor Brook (tributary to the Connecticut) which flows through the pond. Belchertown sheet.

Forge Pond.—Middlesex County; south of Forge Village; inlets, Beaver Brook and Bennett Brook; outlet, Stony Brook to Merrimack River; altitude about 200 feet above sea level; length, 1 mile; maximum width, one-half mile. Lowell sheet.

Forges Pond; Bristol County; an expansion of Assonet River (tributary through Taunton River to Narragansett Bay); 1½ miles northeast of Assonet village. Taunton sheet.

Forked Pond.—Nantucket County; Nantucket Island; south shore; separated from the ocean by a narrow beach. Nantucket sheet.

Fort Meadow Brook.—Middlesex County; rises about 1½ miles northwest of Marlboro, at altitude 280 feet above sea level; flows northeastward 5½ miles into Assabet River (tributary through Concord River to the Merrimack) about 2 miles east of Hudson; passes through Fort Meadow Reservoir. Marlboro sheet.

Fort Meadow Reservoir.—Middlesex County; about 1½ miles southeast of Hudson and 1 mile north of Marlboro; altitude 250 feet above sea level; inlet, Fort Meadow Brook and several other small streams; outlet, Fort Meadow Brook (tributary through Assabet River to Concord River and thus to the Merrimack); length about 1½ miles; maximum width, one-half mile. Marlboro sheet.

FORT POND BROOK.—Middlesex County; rises in a swamp about 2 miles southwest of Littleton Common, at altitude 260 feet above sea level; flows northeastward one-half mile to Long Pond, then takes an irregular course southward 6½ miles to South Acton; from South Acton it flows generally eastward 4 miles to Assabet River (tributary through Concord River to the Merrimack); passes through Fort Pond, about one-half mile south of Long Pond, and through an unnamed pond one-fourth mile from its mouth; marshy through most of its course; principal tributaries, Guggins, Heathen Meadow, and Nashoba brooks. Groton and Framingham sheets.

FORT POND.—Middlesex County; 2½ miles south of Littleton Common; altitude 240 feet above sea level; inlet, a stream 1½ miles long flowing southward from Long Pond; outlet, Fort Pond Brook (tributary through Assabet River to Concord River and thus to the Merrimack). Lowell and Framingham sheets.

FORT POND.—Worcester County; 1 mile southeast of Lunenburg station; no outlet mapped, but topography indicates natural outlet northward through Turner Pond to Bow Brook and thus through Nashua River to the Merrimack. Groton sheet.

FORT RIVER.—Hampshire County; formed east of Amherst by the union of Adams and Amethyst brooks. Amethyst Brook, which drains the larger area and is therefore considered the continuation of the main stream, rises in the southern part of the town of Shutesbury, in Franklin County; flows southwestward 3 miles, then westward 3 miles to East village, where it receives Adams Brook. From this point Fort River flows very irregularly southwestward into Connecticut River about a mile northeast of Hockanum; length to head of Amethyst Brook, 15 miles. The river receives many small tributaries draining the north slope of Holyoke Range. Belchertown and Northampton sheets.

FOSTER BROOK.—Worcester County; town of Gardner; rises about a mile northeast of the city of Gardner; flows southwestward into Otter River (tributary through Millers River to the Connecticut); passes through a number of small ponds; principal tributaries, Pew and Baker brooks. Fitchburg and Winchendon sheets.

FOSTERS POND.—Essex County; about 2½ miles south of Andover, at altitude 80 feet above sea level; inlet, a stream about 1½ miles long from the north; outlet, a stream flowing northwestward about 1 mile into a pond on Shawsheen River (tributary to the Merrimack) on the south slope of Pole Hill; southeast end of Fosters Pond is marshy. Lawrence sheet.

FOUNDRY BROOK.—Franklin County; town of Coleraine; rises on Christian Hill; flows southeastward 3½ miles into East Branch of North River (tributary through North River to Deerfield River and thus to the Connecticut) at Foundry village. Greenfield sheet.

FOURMILE BROOK.—Bristol County; town of Attleboro; rises 2 miles southwest of the city of Attleboro; flows northwestward 1 mile, southwestward and westward 2 miles into Sevenmile River (tributary to Tenmile River and thus through Seekonk River to Providence River which discharges into Narragansett Bay) near South Attleboro. Providence sheet.

FOURMILE BROOK.—Franklin County; rises on the west slope of Crag Mountain; flows northwestward and westward about 1 mile, then southward and southwestward 3½ miles into Connecticut River at Northfield Farms. Warwick sheet.

FOURMILE POND.—Essex County; in a swamp about 3 miles south of Georgetown; inlet, Pye Brook connecting it with Spoffords Pond; outlet, Pye Brook (tributary through Mile Brook to Ipswich River); length, about one-half mile; maximum width, about one-fourth mile; altitude, about 120 feet above sea level. Lawrence sheet.

Fox Brook.—Worcester County; town of Blackstone; rises 1½ miles northwest of Waterbug Hill; flows southeastward 3 miles, then somewhat east of south 2 miles to its junction with Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay) near the city of Blackstone. Blackstone sheet.

Fox Creek.—Essex County; a tidal creek east of Tilton Hill; joins Ipswich River at its junction with Treadwells Island Creek; connected by a canal with Castle Neck River, another tidewater channel. Salem sheet.

Freeland Brook.—Hampden County; rises 1 mile north of Blandford; flows southeastward 2½ miles, then northeastward 2 miles to Russell, where it joins Black Brook (tributary through Westfield River to the Connecticut). Granville sheet.

Freemans Brook.—Worcester County; town of Webster; rises near the city of Webster; flows southward into the northern part of the town of Thompson, Windham County, Conn., then turns to the west and joins the French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound) at Wilsonville; about 3½ miles long. Webster sheet.

Freemans Pond.—Barnstable County; town of Brewster; in the marsh north of West Brewster; connected with Cape Cod Bay by a short stream. Wellfleet sheet.

French Brook.—Worcester County; rises about 1 mile east of Boylston Center, at altitude about 620 feet above sea level; flows in general northwestward and discharges into Wachusett Reservoir on Nashua River (tributary to Merrimack River); length, originally about 4 miles; partially flooded by Wachusett Reservoir. Marlboro sheet and maps of Metropolitan Water District.

French River.—Worcester County, Mass., Windham County, Conn.; rises about 2 miles north of the village of Leicester; flows southward through Sargent Pond to Greenville Reservoir, thence southeastward through Rochdale Pond and a number of ponds above North Oxford, then southward to its junction with Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at Mechanicsville, in the town of Thompson, Windham County, Conn.; length about 26 miles; called Town Meadow Brook above Greenville Reservoir. The basin contains many ponds, the largest being Lake Chaubunagungamaug. Webster and Putnam sheets.

French Stream.—Plymouth County; rises about 1 mile north of North Abington; flows southeastward 2 miles into a pond south of Rockland; considered the head of North River. *See* North River. Abington sheet.

Fresh Brook.—Barnstable County; rises 1½ miles southeast of South Wellfleet; flows westward into Cape Cod Bay; in salt marsh except at head. Wellfleet sheet.

Fresh Pond.—Barnstable County; south of South Dennis. Yarmouth sheet.

Fresh Pond.—Barnstable County; town of Falmouth; south of the village of Falmouth. Falmouth sheet.

Fresh Pond.—Middlesex County; west of Cambridge; connected by an artificial channel with Alewife Brook (tributary to Mystic River); formerly part of the reservoir system of Boston and vicinity; length, about one-half mile, maximum width about one-half mile. Boston sheet.

Fresh Pond.—Plymouth County; town of Plymouth; one-eighth mile east of the south end of Beaver Dam Pond and one-half mile west of the beach. Plymouth sheet.

Fresh River.—Plymouth County; rises near Fort Hill in the town of Hingham; flows southwestward 1 mile, then westward one-half mile into Weymouth Back River. Abington sheet.

Frog Foot Brook.—Plymouth County; a stream about 2 miles long, rising in the southwestern part of the town of Plymouth and flowing southwestward into Tihonet Pond on Wankinco River (tributary through Wareham River to Buzzards Bay). Plymouth sheet.

FROST FISH BROOK.—Essex County; rises 4 miles northwest of Beverly and flows generally southward 3 miles to a point just east of Danvers, where it forms a tidewater channel called Porter River (tributary to Essex Branch and thus to the Atlantic). *See* Porter River. Salem sheet.

FULLER BROOK.—Berkshire and Hampshire Counties; rises in the town of Peru 1½ miles north of Peru Hill; flows southeastward 5 miles into the Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket and Chesterfield sheets.

FULLER BROOK.—Franklin County; town of Hawley; a stream about 2 miles long, flowing northward into Chickley River (tributary through Deerfield River to the Connecticut), one-half mile above the mouth of King Brook. Hawley sheet.

FURNACE BROOK.—Plymouth County; town of Kingston; rises half a mile southeast of Pine Hill; flows in general east of north 2 miles into Jones River (tributary through Kingston Bay to Massachusetts Bay); passes through several small ponds. Middleboro and Plymouth sheets.

FURNACE POND.—Plymouth County; town of Middleboro; an expansion of Fall Brook. *See* Fall Brook. Middleboro sheet.

FURNACE POND.—Plymouth County; town of Pembroke; inlet from No Bottom Pond and from another small pond about three-fourths mile east of its southern end. Furnace Pond is separated from Oldham Pond and Great Sandy Bottom Pond by a ridge less than one-eighth mile wide. Abington sheet.

FURNACE POND.—Worcester County; at East Brookfield; inlet, Fivemile River; outlet, Fivemile River to East Brookfield River (tributary through Quaboag River to Chicopee River and thus to the Connecticut); the pond is nearly 1½ miles long and more than half a mile wide at its northern end. Brookfield sheet.

FURTHER CREEK.—Nantucket County; Nantucket Island; one of a series of tidal inlets at the western end of the island. Muskeget sheet.

GALES BROOK.—Franklin County; the head of Orcutt Brook. *See* Orcutt Brook. Warwick sheet.

GALLOWAY BROOK.—Worcester County; town of Barre; rises 1 mile west of the village of Barre; flows southeastward 2 miles into Prince River (tributary through Ware River to Chicopee River and thus to the Connecticut). Barre sheet.

GALLOWS POND.—Plymouth County; town of Plymouth; west of north end of Long Pond. Plymouth sheet.

GARDNER LAKE.—Essex County; just west of Salisbury and north of Amesbury; inlet, Powow River; outlet, Powow River to Merrimack River; length, 1½ miles; maximum width, about one-fourth mile; south end of lake lies between Whittier and Powow hills; altitude, 100 feet above sea level. Newburyport sheet.

GARFIELD LAKE.—Berkshire County; town of Monterey; south and west of Hunger Mountain; outlet, Konkapot River to Housatonic River. The lake is nearly 2 miles long and about one-half mile in maximum width. Sandisfield sheet.

GATES BROOK.—Worcester County; rises about 1 mile north of Summit Station, on the Fitchburg and Worcester Railroad, at altitude 670 feet above sea level; flows somewhat east of north about 3 miles into Wachusett reservoir. Worcester sheet and maps of Metropolitan water district.

GATES POND.—Worcester County; 2 miles southwest of Hudson, at altitude about 340 feet above sea level; outlet, a small stream about 1 mile long flowing into Assabet River (tributary through Concord River to the Merrimack); length, about three-fourths mile; maximum width, about one-fourth mile. Marlboro sheet.

GIBBS POND.—Nantucket County; Nantucket Island; 2½ miles northwest of Siasconset; circular in outline. Nantucket sheet.

GILSONS BROOK.—Middlesex County; a stream about 1½ miles long flowing southeastward into Stony Brook (tributary to Merrimack River) near West Chelmsford; principal tributary, a stream from Nabnasset Pond. Lowell sheet.

GLEASONS POND.—Middlesex County; just east of Learned Pond and north of South Framingham; one-half mile southeast of Sudbury River (tributary through Concord River to the Merrimack); altitude, about 160 feet above sea level. Framington sheet.

GLEN BROOK, EAST BRANCH.—Franklin County; rises one-half mile southeast of Frizzell Hill, in the town of Leyden; flows southwestward 2 miles into Glen Brook (tributary through Green River to Deerfield River and thus to the Connecticut). Greenfield sheet.

GLEN BROOK.—Franklin County; rises near the village of Leyden; flows irregularly southward 6 miles to its junction with Green River (tributary through Deerfield River to the Connecticut). Greenfield sheet.

GLEN LEWIS POND. *See* Walden Pond.

GLENMERE LAKE.—Essex County; just north of the town of Lynn; inlets, two small streams, unnamed on the map, coming in from the north; outlet, Staceys Brook, which discharges into Nahant Bay; altitude, 60 feet above sea level; very small. Boston Harbor sheet.

GLEN POND.—Plymouth County; town of Wareham; one-half mile southwest of White Island Pond; inlet, Agawam River; outlet, Agawam River to Wareham River and thus to Buzzards Bay. Plymouth sheet.

GLOBE BROOK.—Worcester County; rises on the southwest slope of Wheelock Hill; flows in general west of south into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at the city of Southbridge; length, about 7 miles. Brookfield sheet.

GODDARD BROOK.—Franklin County; town of Montague; rises 2 miles northeast of the village of Montague; flows northwestward one-half mile, then southwestward 2 miles into Saw Mill River (tributary to the Connecticut). Greenfield sheet.

GODDARD POND.—Worcester County; town of Grafton; inlet and outlet, Quinsigamond River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

GOLDEN COVE BROOK.—Middlesex County; rises one-half mile northeast of Chelmsford Center, at altitude 120 feet above sea level; flows eastward three-fourths mile into River Meadow Brook (tributary through Concord River to the Merrimack); marshy. Lowell sheet.

GOLDTHWAIT BROOK.—Essex County; rises in Cedar Pond, 3 miles west of Peabody, at altitude 80 feet above sea level; flows generally eastward 3 miles to its junction with Proctor Brook to form North River (which joins the Atlantic Ocean at Beverly Harbor); principal tributary, Tapley Brook. Salem sheet.

GOODELL HOLLOW BROOK.—Berkshire County; rises on the southwest slope of Mount Greylock; flows northwestward about 2 miles into Green River (tributary through Hoosic River to the Hudson) 2 miles southeast of South Williamstown. Greylock sheet.

GOODRICH HOLLOW BROOK.—Berkshire County, Mass., Rensselaer County, N. Y.; rises in Berry Pond, in the southeastern part of the town of Hancock; flows westward into Wyomanock Creek (tributary through Kinderhook Creek to the Hudson); length in Massachusetts, about 2 miles. Berlin sheet.

GOODRICH POND.—Berkshire County; east of Pittsfield; several inflowing streams; outlet, a stream one-half mile long flowing northeastward into Housatonic River. Becket sheet.

GOOSE BRANCH.—Bristol County; town of Norton; a stream about 2½ miles long flowing northeastward into Wading River (tributary through Threemile River to Taunton River and thus to Narragansett Bay) near Barrowsville. Taunton sheet.

GOOSE POND.—Barnstable County; 1 mile northeast of South Chatham. Yarmouth sheet.

GOOSE POND.—Berkshire County; 3 miles southeast of the city of Lee; inlet from Upper Goose Pond; outlet, Goose Pond Brook to Coddings Brook (tributary to Housatonic River). Becket sheet.

GOOSE POND BROOK.—Berkshire County; rises 1½ miles northwest of West Becket; flows northwestward through Upper Goose Pond to Goose Pond, southwestward through Goose Pond, then northwestward to East Lee, where it joins Coddings Brook (tributary to the Housatonic); length below Goose Pond, 2½ miles. Becket sheet.

GOOSE POND, UPPER.—Berkshire County; 4½ miles southeast of the village of Lee; outlet to Goose Pond, which discharges through Goose Pond Brook to Coddings Brook and thus to Housatonic River; a mile long and very narrow. Becket sheet.

GORE POND.—Worcester County; town of Dudley; outlet to South Charlton Reservoir and thus to Little River (tributary through French River to Quinebaug River and thus through Shetucket and Thames rivers to Long Island Sound). Webster sheet.

GOSNOLD POND.—Nantucket County; Cuttyhunk Island; separated from Buzzards Bay by a narrow reef. Gay Head sheet.

GOVERNOR BROOK.—Worcester County; rises about 2 miles southeast of Princeton Center, at altitude 720 feet above sea level; flows southward about 2 miles into Trout Brook (tributary to Quinapoxet River and thus to Wachusett reservoir). Worcester sheet.

GRACE BROOK.—Franklin County; town of Warwick; the head of Moss Brook (tributary through Millers River to the Connecticut). Warwick sheet.

GRANGER BROOK.—Berkshire and Franklin counties; a stream about 1½ miles long, rising on the eastern slope of the Hoosac Range in the northeastern part of Berkshire County, and flowing eastward into Mill Brook (the head of Dunbar Brook, tributary through Deerfield River to the Connecticut) at the village of Monroe. Greylock sheet.

GRASS BROOK.—Middlesex County; rises about 1 mile west of Blanchard Hill, in the town of Dunstable; flows southeastward 1 mile, then eastward about 1½ miles into Salmon Brook (tributary to the Merrimack). Groton sheet, on which it is called Jointgrass Brook, and Lowell sheet.

GRASS POND.—Barnstable County; three-fourths mile north of Harwich Port; at the west end of a marsh which is drained from the east end by a small stream flowing southward into Nantucket Sound. Yarmouth sheet.

GRASS POND.—Worcester County; a large pond of very irregular outline which receives the overflow from Wachusett and Meeting House ponds and discharges by a stream flowing northeastward to Whitman River (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack); altitude, about 870 feet above sea level. Fitchburg sheet.

GRASSY POND.—Barnstable County; town of Dennis; 2 miles southeast of Scargo Hill. Yarmouth sheet.

GRASSY POND.—Middlesex County; a small pond about 2 miles northeast of West Acton and 1 mile east of Fort Pond Brook (tributary through Assabet River and thus through Concord River to the Merrimack); altitude 240 feet above sea level. Lowell and Framingham sheets.

GRASSY POND.—Plymouth County; town of Plymouth; a small pond 1 mile south of Billington Sea. Plymouth sheet.

GRASSY POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

GRAVEL POND.—Essex County; 2 miles northwest of Manchester; a short distance south of Chebacco Lake (tributary to Essex River); altitude, 60 feet above sea level; small. Salem sheet.

GREAT BROOK.—Franklin County; town of Shelburne; rises on the left slope of Greenfield Mountain; flows southward 2 miles into Hawkes Brook (tributary through Dragon Brook to Deerfield River and thus to the Connecticut). Greenfield sheet.

GREAT BROOK.—Hampden County; rises in Congamuck ponds; flows west of north about 2 miles, then irregularly northeastward to Westfield, where it enters Westfield River (tributary to the Connecticut); length, 8 miles. Granville and Springfield sheets.

GREAT BROOK.—Worcester County; rises 1½ miles northeast of Summit Station; flows in general southeastward into Lake Quinsigamond (outlet, Quinsigamond River to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); length, about 4 miles. Worcester sheet.

GREAT BROOK.—Worcester County; town of Brookfield; rises 1½ miles west of Wheelock Hill; flows northward 2 miles, then westward one-half mile into Quaboag Pond on Quaboag River (tributary through Chicopee River to the Connecticut). Brookfield sheet.

GREAT DRAIN.—Franklin County; town of Sunderland; rises near the village of Sunderland; flows southwesterly into Connecticut River; 2 miles long. Northampton sheet.

GREAT HERRING POND.—Plymouth and Barnstable counties; inlet from Little Herring Pond; outlet, Monument River to Buzzards Bay; the pond is about 2 miles long and less than one-half mile wide, and all except its southeastern end is in Plymouth County. Plymouth sheet.

GREAT MIOXES POND.—Nantucket County; Nantucket Island; one of the numerous elongated ponds on the south shore of the island; separated from the ocean by a barrier beach. Nantucket sheet.

GREAT POND.—Barnstable County; a small pond in the marsh 1¼ miles northwest of Provincetown. Provincetown sheet.

GREAT POND.—Barnstable County; town of Barnstable; outlet, a stream flowing southward and southwestward into Nantucket Sound, at the west side of New Harbor, near Osterville Landing; about 1¼ miles long and 1¼ miles in maximum width. Barnstable sheet.

GREAT POND.—Barnstable County; town of Eastham; one of a group of ponds south of Eastham Center. Wellfleet sheet.

GREAT POND.—Barnstable County; town of Falmouth; a pondlike bay connected by a narrow channel with Vineyard Sound. Falmouth sheet.

GREAT POND.—Barnstable County; town of Wellfleet; 1¼ miles east of the village of Wellfleet; connected with Long Pond by a short stream. Wellfleet sheet.

GREAT POND.—Franklin County; town of Ashfield; northwest of the village of Ashfield; two inflowing streams; outlet, South River to Deerfield River (tributary to the Connecticut). Hawley sheet.

GREAT POND.—Franklin County; town of Montague; two inflowing streams, one of which, the head of Pond Brook, flows through the pond to its junction with Saw Mill River (tributary to the Connecticut). Greenfield sheet.

GREAT POND.—Hampden County; town of Brimfield; principal inlet, East Brook; outlet, East Brook to Mill Brook (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Brookfield sheet.

GREAT POND.—Norfolk County; between the towns of Holbrook and Weymouth; two small inflowing streams, one of which is considered the head of Weymouth Back River; outlet, Mill River (Weymouth Back River) to Whitman Pond. *See* Weymouth Back River. Maximum length of Great Pond, 1¼ miles; altitude, about 160 feet above sea level. Used as water supply for Weymouth. Abington sheet.

GREAT POND.—Norfolk County; on line between towns of Randolph and Braintree one inlet; outlet, a stream one-eighth mile long flowing northward into Wey mouth Fore River in the swamp west of South Braintree. Dedham sheet.

GREAT QUITTACAS POND.—Plymouth County; a pond about 2 miles in greatest length by 1¼ miles in width, immediately south of eastern arm of Assawompsett Pond; principal inflowing streams, Black Brook and a short stream from Little Quittacas Pond; natural outlet, Mattapoisett River; water diverted from the Quittacas ponds for the municipal supply of New Bedford. Middleboro sheet.

GREAT SANDY BOTTOM POND.—Plymouth County; immediately south of Oldham Pond and west of Furnace Pond; inlet from Little Sandy Bottom Pond. Abington sheet.

GREAT SOUTH POND.—Plymouth County; town of Plymouth; inlet from Little South Pond; natural outlet, Eel River to Plymouth Harbor; about three-fourths mile long and one-half mile wide. Used as part of water supply of city of Plymouth. Plymouth sheet.

GREAT SWAMP BROOK.—Essex County; rises in a swamp 2½ miles east of Georgetown, at altitude 60 feet above sea level; flows generally eastward 1½ miles into Mill Creek (tributary through Parker River to Plum Island River and thus to the Atlantic Ocean). Marshy throughout most of its course. Salem sheet.

GREEN BROOK.—Plymouth County; town of Carver; rises in Johns Pond about a mile south of village of North Carver; flows somewhat west of north into Wenatuxet River (tributary through Taunton River to Narragansett Bay); about 2 miles long. Middleboro sheet.

GREENES CREEK.—Essex County; a tidewater channel from Plum Island River (separated from the Atlantic Ocean by Plum Island). Salem sheet.

GREEN HARBOR RIVER.—Plymouth County; towns of Duxbury and Marshfield; rises one-half mile east of Cranberry Pond on South River; flows in general northeastward to Green Harbor Marsh, then southeastward through the marsh into Massachusetts Bay; length, about 7 miles; total drainage area, above mouth about 7.5 square miles; the marshes lie just back of the seacoast line and are separated from the ocean by Branch's and Hewitt's islands and by sand and shingle ridges between the islands and north and south of them. The freshwater flow of the river is very small. Duxbury sheet. *See also* Report of the Joint Board consisting of the Harbor and Land Commissioners and the State Board of Health upon the restoration of Green Harbor in the town of Marshfield, Mass., 1898.

GREEN POND.—Barnstable County; town of Falmouth; a pondlike bay connected with Vineyard Sound by a narrow channel. Falmouth sheet.

GREEN POND.—Franklin County; town of Montague; 1½ miles southwest of Millers Falls and one-eighth mile north of Great Pond. Greenfield sheet.

GREEN RIVER.—Berkshire County; rises on Pratt Hill, in the town of Lanesboro; flows northward through New Ashford to South Williamstown, thence northeastward to its junction with Hoosic River (tributary to the Hudson) at Williamstown; length, about 12 miles; principal tributaries, East Branch, West Branch, and Hopper Brook. Berlin and Greylock sheets.

GREEN RIVER.—Columbia County, N. Y.; Berkshire County, Mass.; rises in No Bottom Pond, in the northeastern part of the town of Austerlitz, N. Y.; flows west of south to Upper Green River, thence southeasterly to the southern part of Great Barrington, Mass., where it joins Housatonic River; length, about 18 miles, of which 9 miles is east of the Massachusetts-New York line; principal tributary in Massachusetts, Seekonk Brook. The river furnishes part of the municipal supply of the village of Great Barrington. Pittsfield and Sheffield sheets.

GREEN RIVER, EAST BRANCH.—Berkshire County; rises on the southeast slope of Sugarloaf Mountain, in the town of New Ashford; flows northward 3 miles into Green River (tributary through Hoosic River to the Hudson) 2 miles northeast of the village of New Ashford. Greylock sheet.

GREEN RIVER, WEST BRANCH.—Berkshire County; rises in the northwestern part of the town of Hancock; flows southeastward 1 mile, then northeastward 5 miles to South Williamstown, where it joins Green River (tributary through Hoosic River to the Hudson). Berlin and Greylock sheets.

GREEN RIVER.—Windham County, Vt.; Franklin County, Mass.; rises on Hogback Mountain, in the town of Marlboro; flows in general southeasterly to its junction with Deerfield River (tributary to the Connecticut) at Greenfield; length, 27 miles, of which 13 miles is below the Massachusetts line; principal tributaries, West Hollow, Hibbard, Workman, Glen, Hinsdale, and Mill brooks. Wilmington, Brattleboro, and Greenfield sheets.

GREENVILLE RESERVOIR.—Worcester County; town of Leicester; principal inlets, stream from Stiles Reservoir and Town Meadow Brook (head of French River); outlet French River to Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). Webster sheet.

GREENWATER POND.—Berkshire County; 1¼ miles south of Becket Mountain; natural outlet, a stream about 5 miles long flowing north of west into Housatonic River at Lee. The outlet stream is not named on the map, but a manuscript report on the Pittsfield-Becket folio indicates that this is Coddings Brook, which furnishes the municipal supply for the village of Lee. Becket sheet.

GREWS POND.—Barnstable County; one of a group of small ponds lying north of the city of Falmouth. Falmouth sheet.

GRIFFIN BROOK.—Berkshire County; rises in the western part of the town of Richmond; flows east of south 4 miles into Shaker Mill Pond (outlet Williams River to the Housatonic); passes through a pond that is a short distance north of Shaker Mill Pond. Pittsfield sheet.

GRIFFITHS POND.—Barnstable County; town of Brewster; 1 mile east of West Brewster. Yarmouth sheet.

GUGGINS BROOK.—Middlesex County; rises one-half mile northeast of Boxboro, at altitude 340 feet above sea level; flows southeastward 1½ miles, then eastward 1½ miles into Fort Pond Brook (tributary through Assabet River to Concord River and thus to the Merrimack; marshy throughout much of its course. Marlboro and Framingham sheets.

GUILDER BROOK.—Berkshire County; town of Mount Washington; a stream about a mile long flowing southwestward and joining City Brook to form Bashbish Brook (tributary through Rocliff Jansen Kill to the Hudson). Sheffield sheet.

GUILDER POND.—Berkshire County; town of Mount Washington; between Mount Undine and Mount Everett. Sheffield sheet.

GULF BROOK.—Berkshire County; rises in South Pond, in the town of Florida; flows southeastward 1 mile, then northeastward 1½ miles into Cold River (tributary through Deerfield River to the Connecticut). Greylock sheet.

GULF BROOK.—Franklin County; town of Orange; a stream about a mile long flowing northward into Millers River (tributary to the Connecticut) at Orange. Warwick sheet.

GULF BROOK.—Middlesex County; rises in Heald Pond in the town of Pepperell; flows northward about 2½ miles into Nissitisset River (tributary through Nashua River to the Merrimack) in Hillsboro County, N. H. Groton sheet.

GULL POND.—Barnstable County; town of Wellfleet; one of a group of ponds northeast of the village of Wellfleet. Wellfleet sheet.

GUNNERS EXCHANGE POND.—Plymouth County; town of Plymouth; 1 mile southeast of Great South Pond. Plymouth sheet.

GUSHEE POND.—Bristol County; town of Raynham; in Titicut Swamp; outlet, a stream flowing northwestward through the swamp, then west of south into Forge Pond on Pine Swamp Brook (tributary through Taunton River to Narragansett Bay). Taunton sheet.

HACKER POND.—Franklin County; town of Salem; inlet, stream not named on map, enters at south end; outlet, stream flowing northeasterly to Spectacle Ponds and thence to Millers River (tributary to the Connecticut). Warwick sheet.

HAGGETTS POND.—Essex County; about 2½ miles west of Andover, at altitude 120 feet above sea level; inlets, 2 small streams, unnamed on the map; outlet, Fish Brook (tributary to Merrimack River); length, 1 mile; maximum width, one-half mile. Lawrence sheet.

HALEY POND.—Berkshire County; town of Otis; a mile northeast of Benton Lake; outlet, a stream 1½ miles long flowing westward into the stream connecting White Lily Pond with Benton Lake (outlet through Otis Reservoir to Farmington River and thus to the Connecticut). Sandisfield sheet.

HALFWAY POND.—Barnstable County; 1½ miles north of Hyannis. Barnstable sheet.

HALFWAY POND.—Barnstable County; town of Yarmouth; a very small pond 2½ miles northwest of South Yarmouth. Yarmouth sheet.

HALFWAY POND.—Plymouth County; town of Plymouth; immediately west of Long Pond, from which it is separated by a narrow ridge; outlet, Agawam River to Wareham River and thus to Buzzards Bay. Plymouth sheet.

HALFWAY POND.—Plymouth County; town of Plymouth; central part of township; outlet, Agawam River to Wareham River (tributary to Buzzards Bay); nearly a mile long and more than one-half mile in maximum width; altitude, about 70 feet. Plymouth sheet.

HALLS BROOK.—Plymouth County; rises in the southern part of the town of Duxbury; flows southward 2 miles, then southeastward 2 miles into Jones River (tributary through Kingston Bay to Massachusetts Bay), about a mile northeast of Kingston; principal tributaries, Bassett, Sampson, Mile, and Tussock brooks; passes through Blackwater Pond. Abington and Duxbury sheets.

HAMANT BROOK.—Worcester County; rises about 2 miles south of Land Mine Mountain; flows northeastward 4 miles into Quinebaug River (tributary through Shetucket River to Thames River, and thus to Long Island Sound). Brookfield sheet.

HAMILTON RESERVOIR.—Hampden County; town of Holland; principal inlet, stream from Mashapaug Pond and Stevens Brook; outlet, a stream flowing northeastward one-half mile, thence northwestward and westward nearly a mile into Holland Pond (outlet to Mill Brook and thus through Quinbaug River to Shetucket River, Thames River, and Long Island Sound). The reservoir is about 2 miles long and nearly half a mile in maximum width. Brookfield sheet.

HAMMOND BROOK.—Plymouth County; rises 1 mile west of South Wareham, flows southward 2 miles, then southeastward 1 mile into Weweantic River (tributary to Buzzards Bay); principal tributary, stream from Blackmore Pond. Middleboro and New Bedford sheets.

HAMMOND POND.—Middlesex County; one-half mile southwest of Chestnut Hill; one small inlet; outlet, a stream about 5 miles long that winds very irregularly westward and northward through Newton Center and Newtonville into Charles River opposite Watertown. Boston sheet.

HAMPTON POND.—Hampshire and Hampden Counties; outlet through Horse Pond Brook (tributary through Powder Mill Brook to Westfield River, and thus to the Connecticut); about a mile long and one-half mile in in maximum width. Springfield sheet.

HARBOR POND.—Middlesex County; on Squannacook River (tributary through Nashua River to the Merrimack) at Townsend Harbor; inlet from Bixby reservoir. Groton sheet.

HARDYS POND.—Middlesex County; north of Waltham; one inlet—the head of Beaver Brook; outlet, Beaver Brook to Charles River. Boston sheet.

HARLOW POND.—Plymouth County; town of Plymouth; one-fourth mile west of Cooks Pond; very small. Plymouth sheet.

HARMAN MARSH POND.—Berkshire County; northwestern part of the town of Sheffield; two inflowing streams; outlet, a stream a mile long flowing southeastward into Willard Brook (tributary through Hubbard Brook to Schenob Brook and thus to the Housatonic). Sheffield sheet.

HARMON POND.—Berkshire County; town of New Marlboro; outlet, a stream a mile long flowing northwestward to a branch of Konkapot River (tributary to the Housatonic). Sandisfield sheet.

HARRIS POND (now drained).—Franklin County; 1½ miles northwest of West Orange; formed by three inflowing streams, one of which, Moss Brook, passed through the pond to its junction with Millers River (tributary to the Connecticut). Warwick sheet.

HARRIS POND.—Worcester County; town of Blackstone; an expansion of Mill River (tributary to Blackstone River, and thus through Seekonk and Providence Rivers to Narragansett Bay), north of the city of Woonsocket, R. I. Blackstone sheet.

HART BROOK.—Hampshire County; rises on the north slope of the Holyoke Range, in the town of Amherst; flows northwestward 2½ miles into Fort River (tributary to the Connecticut). Northampton sheet.

HARTWELL BROOK.—Franklin County; town of Charlemont; rises a mile northeast of Bald Mountain; flows southeastward 2½ miles into Deerfield River (tributary to the Connecticut). Hawley sheet.

HARTWELL BROOK.—Middlesex County; rises about a mile south of Bedford at altitude 150 feet above sea level; flows northeastward 1½ miles into Elm Brook (tributary through Shawsheen River to the Merrimack; marshy through much of its course. Framingham sheet.

HASTINGS POND.—Franklin County; town of Warwick; a mile southeast of the village of Warwick; two small inflowing streams; outlet, Hodge Brook to Gales Brook (the head of Orcutt Brook, tributary through Millers River to the Connecticut). Warwick sheet.

HATCHES CREEK.—Barnstable County; a channel in the marsh 2 miles southwest of South Wellfleet. Wellfleet sheet.

HATCHET BROOK.—Worcester County; town of Southbridge; rises in Hatchet Pond in the northwest corner of the town of Woodstock, Windham County, Conn.; flows northeastward 4 miles into Quinebaug River (tributary through Shetucket River to Thames River, and thus to Long Island Sound), near the village of Westville. Brookfield sheet.

HATHAWAY BROOK.—Plymouth County; town of Lakeville; a stream about a mile long flowing eastward into the stream connecting Elders Pond with Long Pond (tributary through Assawompsett River to Namasket River, and thus through Taunton River to Narragansett Bay). Middleboro sheet.

HAWES BROOK.—Norfolk County; rises in Buckmaster Pond, in the southwestern part of the town of Dedham; flows in general east of south about 3 miles to its junction with Neponset River. Dedham sheet.

HAWKES BROOK.—Essex County; rises on the eastern slope of Spicket Hill, near Ayers Village, at altitude 200 feet above sea level; flows in a general southeasterly direction about 4 miles into Marrimack River at Kimball Island, 3 miles northeast of Lawrence. Haverhill and Lawrence sheets.

HAWKES BROOK.—Essex County; rises 1 mile west of South Lynnfield; flows generally southward 3 miles into Saugus River (tributary to Boston Bay) a short distance above its entrance to Prankers Pond. Lawrence and Boston sheets. Map in report of Massachusetts State Board of Health, 1895, p. 74.

HAWKES BROOK.—Franklin County; town of Shelburne; rises on Brimstone Hill; flows southwestward 1½ miles into Dragon Brook (tributary through Deerfield River to the Connecticut). Greenfield sheet.

HAYDEN POND.—Worcester County; town of Dudley; outlet, a stream that passes through several small ponds to Larned Pond and thus through Merino Pond to French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

HAYES POND.—Berkshire County; south of Kingsbury Mountain; outlet, Hop Brook to Housatonic River. Sandisfield sheet.

HAYWARD BROOK.—Middlesex County; rises 1½ miles east of Wayland, and 6 miles north of Natick, at altitude about 140 feet above sea level; flows southwestward 1 mile, then westward 1 mile through a swamp into Sudbury River (tributary through Concord River to the Merrimack). Framingham sheet.

HAYWARD CREEK.—Norfolk County; a tidal inlet connecting with Weymouth Fore River south of Quincy Neck. Abington sheet.

HAZZARD POND.—Hampden County; town of Russell; outlet, a stream 1 mile long flowing northeastward into Potash Brook (tributary through Westfield River to the Connecticut) near Salmon Falls. Granville sheet.

HEALD POND.—Middlesex County; 2 miles west of Pepperell; outlet, Gulf Brook to Nissitisset River (tributary through Nashua River to the Merrimack). Groton sheet.

HEARTHSTONE BROOK.—Hampshire County; a stream about 1 mile long, rising on the west slope of Mount Orient and flowing southwesterly and westerly into Adams Brook (tributary through Fort River to the Connecticut). Belchertown sheet.

HEATH BROOK.—Middlesex County; rises in the town of Tewksbury, 1½ miles south of Tewksbury Center, at altitude about 100 feet above sea level; flows generally north of east 1½ miles into Shawsheen River (tributary to the Merrimack). Lawrence sheet.

HEATHEN MEADOW BROOK.—Middlesex County; rises about 1 mile southeast of Boxboro at altitude 300 feet above sea level; flows southward 2 miles, eastward one-half mile, then northeastward 2 miles into Fort Pond Brook (tributary through Assabet River to Concord River and thus to the Merrimack) one-half mile south of West Acton; marshy near its mouth. Marlboro and Framingham sheets.

HEDGE POND.—Plymouth County; town of Plymouth; inflowing stream drains two small ponds; outlet, a stream half a mile long flowing northeastward into Plymouth Bay at High Cliff. Plymouth sheet.

HEIRD POND.—Middlesex County; in a swamp 1½ miles north of Saxonville; outlet, a very short stream to Sudbury River (tributary through Concord River to the Merrimack); altitude, about 120 feet above sea level; length, one-half mile; maximum width, one-fourth mile. Framingham sheet.

HELL POND.—Worcester County; one-half mile west of Hartford station on the Worcester & Nashua division of the Boston & Maine Railroad; outlet, a stream 1½ miles long flowing southwestward through a swamp into Nashua River (tributary to Merrimack River). Groton sheet.

HEMLOCK BROOK.—Berkshire County; rises in the northwestern part of Williamstown; flows southeastward 3 miles, then east of north about 3 miles to its junction with Hoosic River (tributary to the Hudson) a mile north of the city of Williamstown; tributaries, Sweet Brook and Buxton Brook. Berlin and Greylock sheets.

HENSHAW POND.—Worcester County; town of Leicester; outlet, a stream 2½ miles long flowing west of south into Rochdale Pond on French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

HERRING BROOK.—Plymouth County; northern part of town of Carver; rises in Wenham Pond; flows southeastward a mile into South Meadow Brook (head of Weweantic River which is tributary to Buzzards Bay). Middleboro sheet.

HERRING BROOK.—Plymouth County; rises about 1 mile southwest of West Duxbury; flows northwestward 4 miles into Indian Head River (North River); principal tributaries, Pudding Brook, Little Pudding Brook, and Swamp Brook. Abington sheet.

HERRING POND.—Barnstable County; town of Eastham; one of a group of ponds south of Eastham Center. Wellfleet sheet.

HERRING POND.—Barnstable County; town of Wellfleet; inlets from Slough and Higgins ponds; outlet, Herring River to Wellfleet Harbor, Cape Cod Bay. Wellfleet sheet.

HERRING POND.—Barnstable County; 2 miles north of West Falmouth; outlet, a stream flowing westward into Buzzards Bay. Falmouth sheet.

HERRING RIVER.—Barnstable County; rises in Long Pond; flows southwestward through Hinckleys Pond to North Harwich, then very irregularly southward into Nantucket Sound; length, about 6 miles. Yarmouth sheet.

HERRING RIVER.—Barnstable County; rises in the Mill ponds south of West Brewster; flows northward through a marsh into Cape Cod Bay; a channel in the marsh connects Herring River with Quivett Creek; length of river from the bay to lower end of the Mill ponds, about 1 mile. Yarmouth and Wellfleet sheets.

HERRING RIVER.—Barnstable County; town of Wellfleet; rises in Herring Pond; flows southwestward and southward through the marshes north and west of Wellfleet into Wellfleet Harbor, Cape Cod Bay. Wellfleet sheet.

HERRING RIVER.—Barnstable County; a channel in the marsh 1½ miles north of Rock Harbor. Wellfleet sheet.

HIBBARD BROOK.—Franklin County; town of Leyden; a stream 1½ miles long, flowing southwestward into Green River (tributary through Deerfield River to the Connecticut) southeast of West Leyden. Greenfield sheet.

HICKS POND.—Worcester County; town of Charlton; a mile north of Charlton City; outlet, Cady Brook, to Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). Webster sheet.

HIGGINS POND.—Barnstable County; town of Wellfleet; one of a group of ponds northeast of Wellfleet village; outlet, through Herring Pond and Herring River to Wellfleet Harbor, Cape Cod Bay. Wellfleet sheet.

HIGHER BROOK.—Hampden County; rises in the town of Ludlow, on the south slope of Facing Hills; flows west of south 4 miles, northwesterly 2 miles, then southwesterly and southerly 3 miles into Chicopee River (tributary to the Connecticut). Palmer and Springfield sheets.

HINCKLEY POND.—Barnstable County; town of Barnstable; on the southeastern edge of the marshes. Barnstable sheet.

HINCKLEYS POND.—Barnstable County; town of Harwich; inlet, Herring River from Long Pond; outlet, Herring River to Nantucket Sound; about three-fourths mile long; nearly one-half mile wide. Yarmouth sheet.

HINSDALE BROOK.—Franklin County; town of Shelburne; rises 2 miles northwest of East Shelburne; flows southeastward 5 miles into Green River (tributary through Deerfield River to the Connecticut); principal tributary, Allen Brook. Greenfield sheet.

HITCHCOCK POND.—Hampden County; town of Holyoke; north of and connected with Ashley Pond; outlet, Black Brook to Westfield River (tributary to the Connecticut); much smaller than Ashley Pond; principal inlet, the head of Black Brook. Springfield sheet.

HITHER CREEK.—Nantucket County; Nantucket Island; one of a series of tidal inlets at the western end of the island. Muskeget sheet.

HOBBS BROOK.—Middlesex County; rises in the marsh northeast of the village of Lincoln, flows southeastward 1½ miles, then in general west of south 4 miles into Stony Brook (tributary to Charles River). Framingham sheet.

HOBBS BROOK.—Worcester County; rises 1½ miles northeast of Walker Pond; flows southwestward through Walker Pond and the pond north of the village of Sturbridge into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound); length about 5 miles. Brookfield sheet.

HOBOMOC POND.—Plymouth County; town of Pembroke; a small pond connected by a northward flowing stream with Herring Brook (tributary to North River). Abington sheet.

HOBOMOC POND.—Plymouth County; town of Pembroke; three-fourths mile east of Furnace Pond. Abington sheet.

HOCKOMOCK RIVER. *See* Town River.

HOCOMOCO POND.—Worcester County; 2 miles west of Westboro; one inlet; outlet, a stream one-half mile long flowing northeastward to Assabet River (tributary through Concord River to the Merrimack). Marlboro sheet.

HODGE BROOK.—Franklin County; town of Warwick; rises in Hastings Pond; flows first eastward and then southward to its junction with Gales Brook (head of Orcutt Brook, tributary through Millers River to the Connecticut); about 2 miles long. Warwick sheet.

HODGES BROOK.—Bristol County; town of Mansfield; rises 2 miles southwest of the city of Mansfield; flows southward into Wading River (tributary through Threemile River to Taunton River and thus to Narragansett Bay); about 3 miles long. Franklin, Dedham, and Taunton sheets.

HODGES POND.—Plymouth County; town of Plymouth; 1½ miles southeast of Halfway Pond. Plymouth sheet.

HOG BROOK.—Worcester and Middlesex counties; rises about 2 miles west of Hudson at altitude 420 feet above sea level; flows generally northeastward 1½ miles, then southeastward 1 mile into Assabet River (tributary through Concord River to the Merrimack) just southwest of Hudson. Marlboro sheet.

HOG PONDS.—Barnstable County; two small ponds lying south of the village of Farmersville. Barnstable sheet.

HOLDEN RESERVOIR.—Worcester County; between Stone House Hill and Asnebumskit Hill; three small inflowing streams; natural outlet, Tatnuck Brook to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); used as a part of the water-supply system of Worcester. Worcester sheet.

HOLLAND POND.—Hampden County; town of Holland; north of the village of Holland; inlet, stream from Hamilton Reservoir; outlet, a stream flowing somewhat west of north through a swamp to Mill Brook (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Brookfield sheet.

HOLLOW BROOK.—Berkshire County; town of Lanesboro; a stream 2½ miles long flowing southeastward into Sachem Brook (tributary through Pontoosuc Lake to West Branch of Housatonic River and thus to Housatonic River). Berlin sheet.

HOLLOW BROOK.—Hampden County; towns of Wales and Brimfield. *See* Quinebaug River.

HOMER POND.—Dukes County; Marthas Vineyard; one of a series of ponds on the south shore of the island, separated from the ocean by a continuous barrier beach; east of Tisbury Great Pond. Marthas Vineyard sheet.

HOOD POND.—Essex County; 4 miles southeast of Georgetown; inlets, two small marshy streams coming in from the north; outlet, a small marshy stream to Pye Brook (tributary through Mile Brook to Ipswich River); length about one-half mile; maximum width, about one-fourth mile. Salem sheet.

HOOP BROOK.—Hampshire County; rises 2 miles south of Mount Lincoln; flows southwestward 1½ miles, westward 2 miles, thence northwestward 3 miles through Lawrence Swamp into Fort River (tributary to the Connecticut). Belchertown sheet.

HOOPER POND.—Plymouth County; town of Plymouth; a small pond 2 miles southeast of Great South Pond. Plymouth sheet.

HOOSIC RIVER.—Rises about 2 miles northwest of Dalton, in Berkshire County, Mass., at an altitude of 1,300 feet above sea level. Its general course lies first somewhat east of north to North Adams, where it receives its North Branch, thence northwestward passing across the extreme southwestern corner of Vermont into Rensselaer County, N. Y.; at the northern border of that county it turns and flows irregularly westward, joining the Hudson opposite Stillwater. The total length of the river to the head of the South Branch or main stream is about 56 miles; its fall is 1,220 feet. Area of drainage basin, about 730 square miles (Rafter); principal tributaries, Little Hoosic and Walloomsac rivers and Tomhannock Creek, all of which enter in the State of New York. The principal tributaries in Massachusetts are North Branch of the Hoosic and Green rivers. Most of the other tributaries are short and unimportant.

The country drained is to a great extent rugged and mountainous, the summits of the Taghkanick and Petersburg ranges attaining elevations of 1,000 to 2,000 feet above sea level, and the Ragged Mountains, south of North Adams, culminating in Mount Greylock at 3,505 feet above sea. The immediate valley of the Hoosic comprises a moderately hilly, open country, which is good farming land, even to the tops of the hills and is well cultivated.

The stream is one of the largest tributaries of the Hudson and, excepting perhaps the Mohawk, is the most important in point of manufacturing. A large share of the fall has been improved.

Tenth Census Report, vol. 16; Rafter, Hydrology of the State of New York, Bull. 85, N. Y. State Museum. Becket, Greylock, Berlin, Hoosic, and Cohoes sheets.

HOOSIC RIVER, NORTH BRANCH.—Bennington County, Vt., Berkshire County, Mass.; rises in the town of Stamford, near Heartwellville, Vt., flows southwestward to the city of North Adams, where it joins Hoosic River (tributary to the Hudson); length, 11 miles; principal tributaries in Massachusetts, Hudson and Hunterfield brooks. Bennington and Greylock sheets.

HOP BROOK.—Berkshire County; rises in Hayes Pond south of Kingsbury Mountain; flows northwesterly through Tyringham into Housatonic River; length, 8 miles. Sandisfield and Becket sheets.

HOP BROOK.—Franklin County; town of New Salem; rises 2 miles northwest of the village of New Salem; flows southeasterly to Hop Brook Pond, then northeasterly into the Middle Branch or head of Swift River (tributary through Ware River to the Chicopee and thus to the Connecticut) at Millington; principal tributary, Moose Horn Brook. Belchertown sheet.

HOP BROOK.—Middlesex County; rises about one-fourth mile east of reservoir No. 5, 4 miles northwest of Framingham Center, at altitude 260 feet above sea level; takes a very irregular course northward for 5 miles to its junction with Run Brook,

then flows generally southeastward 2½ miles to its junction with Landham Brook to form Wash Brook (tributary through Sudbury River to Concord River and thus to the Merrimack); marshy throughout part of its course; passes through several small lakes; principal tributaries, Run and Dudley brooks. Framingham sheet.

Hop Brook Pond.—Franklin County; town of New Salem; inlets, Moose Horn and Hop brooks; outlet, Hop Brook to Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown sheet.

Hop Brook.—Worcester County; rises one-half mile south of Shrewsbury, on the north slope of Golden Hill; takes a very circuitous but in general easterly course to its junction with Assabet River (tributary through Concord River to the Merrimack), 2 miles south of Northboro; principal tributary, Bummet Brook. Marlboro sheet.

Hop Brook.—Worcester County; rises a mile east of Wigwam Hill; flows southeastward into Mill River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay) near East Blackstone; about 4 miles long. Blackstone sheet.

Hopper Brook.—Berkshire County; formed in The Hopper by the union of small streams draining the western slope of Mount Williams, Mount Fitch, and Mount Greylock; flows northwestward 2 miles, then northward 1½ miles into Green River (tributary through Hoosic River to the Hudson) at Sweets Corners. Greylock sheet.

Horn Pond.—Berkshire County; town of Becket; 2½ miles east of Becket Center; outlet, a stream 1 mile long flowing southeastward into Walker Brook (tributary through West Branch of Westfield River to Westfield River and thus to the Connecticut). Becket sheet.

Horn Pond.—Middlesex County; on the southwest outskirts of Woburn; inlets, several small streams entering from the west; outlet, a stream flowing southeastward into Wedge Pond and thus through Aberjona River and Mystic lakes to Mystic River, which discharges into Boston Bay; altitude, 60 feet above sea level; length, about one-half mile; maximum width, about one-fourth mile. Boston sheet.

Horse Leech Pond.—Barnstable County; town of Wellfleet; one of a group of ponds northeast of the village of Wellfleet. Wellfleet sheet.

Horse Neck Brook.—Plymouth County; town of Carver; a stream about a mile long flowing southeastward into a pond on South Meadow Brook (head of Weweantic River, which is tributary to Buzzards Bay). Middleboro sheet.

Horse Pond Brook.—Worcester County; town of North Brookfield; rises in Horse Pond, 2 miles north of North Brookfield; flows southeastward 3 miles into Fivemile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut). Barre sheet.

Horse Pond.—Hampden County; south of and connected with Hampton Pond (outlet, Pond Brook to Powder Mill Brook, which is tributary through Westfield River to the Connecticut). Springfield sheet.

Horse Pond.—Worcester County; 2 miles north of North Brookfield; outlet, Horse Pond Brook to Fivemile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut). Barre sheet.

Houghton Pond.—Norfolk County; town of Randolph (?); 1 mile south of east of Great Blue Hill; two inflowing streams, one of which is considered the head of Weymouth Fore River; outlet, Weymouth Fore River. Dedham sheet.

HOUSATONIC BRANCH.—Berkshire County; rises in the eastern part of town of Richmond, one-half mile west of Osceola Mountain; flows west of north to Richmond Pond, then winds northeasterly and easterly to the south border of the city of Pittsfield, where it joins the west branch of Housatonic River (tributary of Housatonic River); length below Richmond Pond, 4½ miles; principal tributaries, Shaker, Phelps, and Smith brooks. Pittsfield sheet.

HOUSATONIC BRANCH.—Berkshire County; rises in the town of Peru, 1½ miles south of the village of Peru; flows westward into Housatonic River in the town of Hinsdale; about 4 miles long; principal tributary, stream from Ashmere Lake. Becket sheet.

HOUSATONIC RIVER.—Berkshire County, Mass.; Litchfield, Fairfield, and New Haven counties, Conn.; rises near Washington Station in the town of Washington; flows northward through Hinsdale to Dalton, thence southwestward to Pittsfield, where it receives a branch from the north (the west branch); thence southerly to Long Island Sound in the vicinity of Stratford, Conn.; length about 125 miles; drainage area, 1,930 square miles; drainage area above Massachusetts State line, 532 square miles, of which 487 square miles is in Massachusetts, 33 square miles in New York, and 12 square miles in Connecticut; principal tributaries above Pittsfield, Housatonic Branch (Hinsdale), East Branch, West Branch; below Pittsfield the principal tributaries in Massachusetts are Sackett Brook, Yokum River, Hop Brook, Williams and Green rivers, Hubbard Brook, and Konkapot River.

Some of the headwater streams rise at altitudes exceeding 2,000 feet above sea level. At Pittsfield the river is about 1,000 feet above sea level. The headwater region is forested, but the lower part of the basin consists principally of farm lands. Power has been developed at Housatonic, Great Barrington, and a number of other places in Massachusetts.

Gaging stations: Great Barrington, Mass., 1913–1915, Falls Village, Conn., 1912–1915.

Maps of basin: Berlin, Greylock, Becket, Pittsfield, Sheffield, Sandisfield, Cornwall, Winsted, New Bedford, Waterbury, Danbury, Derby, Norwalk, and Bridgeport sheets. *See* pages 33–40 of this report.

HOUSATONIC RIVER, EAST BRANCH.—Berkshire County; rises in the town of Windsor; flows southwesterly to Dalton, where it joins the Housatonic; length, 8 miles; tributaries all short. Greylock and Becket sheets.

HOUSATONIC RIVER, WEST BRANCH.—Berkshire County; rises in the southwestern part of the town of New Ashford; flows southerly to its junction with Housatonic River on the south border of the city of Pittsfield; passes through Pontoosuc Lake; length, 12 miles; principal tributaries, Onota Brook and Housatonic Branch (Pittsfield). The name West Branch is here applied to this stream to distinguish it from the main Housatonic which drains the area lying east of Pittsfield, though no such distinction is made on the map. Berlin, Greylock, Pittsfield, and Becket sheets.

HOUSE BROOK.—Middlesex County; rises 1½ miles southeast of South Chelmsford, and about one-fourth mile north of Tophet Swamp, at altitude 160 feet above sea level; flows northeastward three-fourths mile into River Meadow Brook (tributary through Concord River to the Merrimack). Lowell sheet.

HOVEYS POND.—Essex County; 1 mile northwest of West Boxford and 2 miles southwest of South Groveland; outlet, a stream about a mile long that passes through a very small pond and flows northeastward into Johnsons Pond (outlet through a small stream to the Merrimack); altitude, 140 feet above sea level; very small. Lawrence sheet.

HOWARD BROOK.—Plymouth County; town of Kingston; a stream about 2 miles long flowing southwestward into Jones River (tributary to Kingston Bay). Abington sheet.

HOWARD BROOK.—Worcester County; rises on the northwest slope of Mount Pisgah; flows southeastward about 4 miles into Cold Harbor Brook (tributary through Assabet River to the Concord and thus to the Merrimack) just above the entrance of Cold Harbor Brook; passes through two small lakes. Marlboro sheet.

HOWLETT BROOK.—Essex County; a stream 1½ miles long in the marsh northeast of Topsfield. Mile Brook (tributary to Ipswich River) is formed by the junction of Pye and Howlett brooks. Salem sheet.

HOXIE CREEK.—Berkshire County; rises on the northeast slope of Mount Greylock; flows southeastward 2½ miles to Adams, where it enters Hoosic River (tributary to the Hudson). Greylock sheet.

HUBBARD BROOK.—Berkshire County; rises (as Karner Brook) in the northwestern part of the town of Mount Washington; flows northerly into Egremont, easterly to South Egremont, then southeasterly to Sheffield, where it joins Schenob Brook (tributary to the Housatonic); called Karner Brook west of South Egremont; length to head of Karner Brook, 10 miles, principal tributary, Willard Brook; passes through Mill Pond northwest of Sheffield. Sheffield sheet.

HUBBARD BROOK.—Hamden County; head of East Branch of Farmington River (tributary through Farmington River to the Connecticut). Granville sheet.

HUDSON BROOK.—Bennington County, Vt., Berkshire County, Mass.; rises in the western part of the town of Stamford, Vt.; flows southesterly 6 miles to North Adams, Mass., where it joins North Branch of Hoosic River (tributary through Hoosic River to the Hudson). Bennington and Greylock sheets.

HUMMOCK POND.—Nantucket County; Nantucket Island; an elongated pond separated from the ocean by a narrow beach and extending in a northeasterly direction more than half way across the western end of the island. Nantucket sheet.

HUNTERFIELD BROOK.—Berkshire County, Mass.; rises in the northwestern part of the town of Clarksburg; flows southeasterly 3 miles, then west of south 1½ miles to North Adams, where it enters the North Branch of Hoosic River (tributary through the Hoosic River to the Hudson). Greylock sheet.

HUNTING BROOK; Cheshire County, N. H., Worcester County, Mass. The continuation of Tilly Brook—the head of East Branch of Tully River (tributary through Millers River to Connecticut River). *See* Tully River. Winchendon sheet.

HUNTINGHOUSE BROOK.—Plymouth County; town of Carver; a stream 1½ miles long flowing northwestward into Stony Brook (tributary through Wenatuxet River to Taunton River and thus to Narragansett Bay). Middleboro sheet.

INDIAN BROOK.—Plymouth County; town of Plymouth; rises in the eastern part of the township; flows northeastward 2½ miles and discharges into Cape Cod Bay north of Indian Hill. Plymouth sheet.

INDIAN HEAD BROOK.—Plymouth County; rises in Maquan Pond; flows southwestward to Indian Head Pond, then westward and northward through the pond near Hanson to its junction with Indian Head River (tributary through North River to Massachusetts Bay); length, about 5 miles. Abington sheet.

INDIAN HEAD POND.—Plymouth County; town of Hanson; inlet from Maquan Pond; outlet, Indian Head Brook to Indian Head River and thus through North River to Massachusetts Bay. Abington sheet.

INDIAN HEAD RIVER.—Plymouth County; the middle stretch of North River, q. v. The principal tributaries of Indian Head River are Drinkwater River, Indian Head Brook, and Herring Brook. Abington sheet.

INDIAN RIVER.—Essex County; rises on the southwest slope of Archeland Hill, 1 mile east of West Newbury, at altitude 140 feet above sea level; flows westward one-half mile, then generally northward 2½ miles, passing along the west slope of Pipestave Hill and discharging into Merrimack River about 3½ miles west of Newburyport. Newburyport sheet.

IPSWICH RIVER.—Middlesex and Essex counties; rises 2 miles southwest of Wilmington Center, at altitude 120 feet above sea level; flows generally eastward 13 miles, northward 5 miles, then eastward 5½ miles into Wenham Swamp; between this point and the mouth it has a drainage area of 96.7 square miles. From Wenham Swamp it takes a general course north of east for 10 miles to the Atlantic; marshy throughout most of its course; principal tributaries, Maple Meadow, Lubbers, Bear Meadow, Martins, Wills, Boston, Fish, Mile, Howlett, and Black brooks, and Miles River. Lawrence and Salem sheets.

IRONSTONE RESERVOIR.—Worcester County, Mass., and Providence County, R. I.; one inflowing stream; outlet a stream one-half mile long flowing northeastward into Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); the reservoir is about 2 miles long and one-eighth mile in maximum width. Blackstone sheet.

IRONWORK BROOK; Berkshire County; town of Sheffield; rises in the northeastern part of the township; flows southward 3 miles, then southwesterly, westerly, and southerly 2½ miles into Housatonic River. Sheffield sheet.

ISLAND CREEK.—Plymouth County; town of Duxbury; rises 1 mile west of the south end of Island Creek Pond; flows eastward into the pond, and then southward into Kingston Bay, a branch of Massachusetts Bay; length, 2 miles. Duxbury sheet.

ISLAND CREEK POND.—Plymouth County; town of Duxbury; one inflowing stream, considered head of Island Creek; outlet, Island Creek to Kingston Bay, a branch of Massachusetts Bay. Duxbury sheet.

ISLAND END RIVER.—Middlesex County; a short tidal creek just west of Chelsea; about a mile long; joins Mystic River opposite Charlestown. Boston sheet.

ISLAND POND.—Plymouth County; town of Plymouth; one-fourth mile west of north end of Great Herring Pond. Plymouth sheet.

ISLAND POND.—Plymouth County; town of Plymouth; 1 mile south of Beaver Dam Pond. Plymouth sheet.

ISLAND POND.—Plymouth County; town of Plymouth; 1½ miles east of the south end of Great South Pond; inlet, a short stream flowing eastward from Jenkins Hole. Plymouth sheet.

ISRAELS POND.—Barnstable County; 2½ miles north of Hyannis; near Yarmouth Camp Grounds. Barnstable sheet.

JABISH BROOK.—Hampshire County; rises on the east slope of Mount Lincoln in the town of Pelham; flows in general southeasterly 13 miles to a point one-fourth mile east of Barretts Junction, where it enters Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown and Palmer sheets.

JACK BROOK.—Franklin County; rises on the east slope of Brush Mountain; flows east of south 3 miles into Keyup Brook (tributary through Millers River to the Connecticut). Warwick sheet.

JACOB POND.—Plymouth County; northeast of Assinippi; inlet and outlet, Third Herring Brook (tributary to North River). Abington sheet.

JAMAICA POND.—Suffolk County; west of Jamaica Plain; outlet through a chain of small ponds and the Back Bay Fens to Charles River. Boston sheet.

JAMES BROOK.—Middlesex County; rises about one-half mile northeast of Groton; flows southward 3 miles, then westward 1½ miles into Nashua River (tributary to the Merrimack). Groton sheet.

James Pond.—Barnstable County; a small pond three-fourths mile west of South Yarmouth; one-eighth mile from Long Pond. Yarmouth sheet.

James Pond.—Dukes County; Marthas Vineyard; northern part of West Tisbury; connected with Vineyard Sound through a channel into Lamberts Cove. Marthas Vineyard sheet.

Jenkins Hole.—Plymouth County; town of Plymouth; 1 mile east of the south end of Great South Pond; outlet eastward to Island Pond. Plymouth sheet.

Jenkins Pond.—Barnstable County; town of Falmouth; 1¾ miles northwest of East Flamouth. Falmouth sheet.

Jennings Pond.—Middlesex County; 1½ miles northeast of Natick; inlet, stream flowing through two small lakes in the marsh northwest of the pond; outlet, a stream one-half mile long flowing southeastward into Morses Pond (tributary through Waban Lake to Charles River). Framingham sheet.

Jobs Neck Pond.—Dukes County; Marthas Vineyard; one of a series of ponds on the south shore of the island, separated from the ocean by a continuous barrier bench; a short distance west of Edgartown Great Pond. Marthas Vineyard sheet.

John Pond.—Barnstable County; 3 miles north of Waquoit village; about a mile long; the pond has two outlets, one (Childs River) flowing from the south end, the other (Quostinet River) flowing eastward through a marsh and then southward, from the north end; both rivers discharge through Waquoit Bay into Nantucket Sound. Falmouth sheet.

John Pond.—Barnstable County; town of Mashpee; at the head of an eastern arm of Waquoit Bay, on Nantucket Sound. Barnstable sheet.

Johnsons Pond.—Essex County; 2½ miles southeast of Bradford, and just southwest of Groveland; inlets, streams from Hoveys and Chadwick ponds, and a small stream from an unnamed pond; outlet, a stream that passes through several unnamed ponds and flows northward 1½ miles into Merrimack River, one-fourth mile west of Groveland; altitude, 80 feet above sea level; length, about 1 mile; maximum width, about one-half mile. Lawrence sheet.

Johns Pond.—Plymouth County; town of Carver; about a mile south of village of North Carver; outlet, Green Brook to Wenatuxet River (tributary through Taunton River to Narragansett Bay). Middleboro sheet.

Joice Creek.—A channel in the marsh northeast of Yarmouth Port; connects with Chase Garden Creek. Yarmouth sheet.

Jonathan Pond.—Plymouth County; town of Wareham; a small pond without natural surface outlet, used by Onset as a source of municipal water supply. Plymouth sheet.

Jones River Brook.—Plymouth County; rises in the town of Plympton; flows northwestward 2 miles, northward 1½ miles, then northeastward 1 mile into Jones River (tributary through Kingston Bay to Massachusetts Bay). Middleboro sheet.

Jones River.—Essex County; a tidewater channel about 1½ miles long, one arm of which connects with Little River and another arm with Squam River. Jones River also joins Squam River at its mouth. Pierce Island is formed by the two junctions of Squam and Jones Rivers. Gloucester sheet.

Jones River.—Plymouth County; town of Kingston; the natural outlet of Silver Lake. *See* Silver Lake. The general course of the river is eastward and it discharges into Kingston Bay; the head of the river above Silver Lake is called Tubbs Meadow Brook; principal tributary, Jones River Brook. Abington, Middleboro, and Plymouth sheets.

JORDAN POND.—Worcester County; town of Shrewsbury; a small pond one-fourth mile east of Lake Quinsigamond (tributary through Quinsigamond River to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay) into which it discharges by a westward flowing stream. Marlboro sheet.

JUNIPER POND.—Berkshire County; town of New Marlboro; one inlet; outlet, a stream 1½ miles long flowing southward into Konkapot River (tributary to the Housatonic) at Mill River village; very small. Sheffield sheet.

JUSTICE BROOK.—Worcester County; rises about 3 miles southwest of Leominster, at altitude 810 feet above sea level; flows in general southerly to its junction with Stillwater River (tributary to Wachusett reservoir); passes through two ponds. Fitchburg and Worcester sheets.

KARNER BROOK.—Berkshire County; head of Hubbard Brook (tributary through Schenob Brook to Housatonic River). Sheffield sheet.

KEARNEY BROOK.—Hampshire County; rises on Bryant Mountain in the western part of the town of Cummington; flows southeastward 3 miles into Bronson Brook, the head of West Branch (tributary through Westfield River to the Connecticut). Chesterfield sheet.

KEEN BROOK.—Plymouth County; rises north of West Duxbury; flows northeastward 2 miles into South River (tributary to Massachusetts Bay). Abington and Duxbury sheets.

KELLEYS POND.—Barnstable County; south of West Dennis; outlet southward into the small marsh lying east of the mouth of Bass River. Yarmouth sheet.

KENDALL POND.—Worcester County; 1 mile east of the village of East Templeton; outlet, a stream one-eighth mile long flowing northeastward into Otter River (tributary through Millers River to the Connecticut). Winchendon sheet.

KENOZA LAKE.—Essex County; one-half mile northeast of Haverhill, 1½ miles north of Merrimack River; altitude, about 120 feet above sea level; length, about 1 mile; maximum width, one-half mile. Haverhill sheet.

KETTLE BROOK.—Worcester County; rises on the west slope of Little Asnebumskit Hill; flows southeastward through many small ponds to Stoneville; thence eastward and northward to its junction with Blackstone River (tributary through Seekonk and Providence rivers to Narragansett Bay) in the southwestern part of the city of Worcester; principal tributaries, Lynde, Dark, and Ramshorn brooks. Worcester and Webster sheets.

KEYES BROOK.—Middlesex County; rises on the northwest slope of Snake Meadow Hill, 2 miles northwest of Graniteville; flows very irregularly northeastward to Keyes Pond, thence southeastward to Stony Brook (tributary to the Merrimack) near Westford station. Called Meadow Brook above Keyes Pond. Length to head of Meadow Brook, 4½ miles; below Keyes Pond, 2 miles. Lowell sheet.

KEYES BROOK.—Worcester County; rises in a pond 1 mile east of Wachusett Pond in the town of Princeton, at altitude about 810 feet above sea level; flows southeastward about 1½ miles into the lake at East Princeton that forms the head of Stillwater River (tributary to Wachusett reservoir). Fitchburg and Worcester sheets.

KEYES POND.—Middlesex County; 1½ miles north of Graniteville; inlet, Meadow Brook (head of Keyes Brook) and Spaldings Brook; outlet, Keyes Brook to Merrimack River; altitude, 180 feet. Lowell sheet.

KEYUP BROOK.—Franklin County; towns of Northfield and Erving; rises 1 mile south of Alexander Hill; flows southward into Millers River (tributary to the Connecticut) at Erving; principal tributary, Jack Brook; 5 miles long. Warwick sheet.

KICKAMUIT RIVER.—Bristol County, Mass., and Bristol County, R. I.; rises in Warren reservoir in the town of Swansea; flows southwestward to Warren, thence southeastward to Narragansett Bay through Mount Hope Bay; tidal in its lower course. Taunton and Narragansett Bay sheets.

KIDDER BROOK.—Franklin County; town of Warwick; a stream about a mile long, flowing westward and uniting with Mountain Brook to form Mirey Brook (tributary through Ashuelot River to the Connecticut). Warwick sheet.

KILN BROOK.—Middlesex County; rises in a small pond 3½ miles east of Concord and 2½ miles south of Bedford, at altitude about 160 feet above sea level; flows northward 1½ miles, then eastward about a mile into Shawsheen River (tributary to Merrimack River); marshy near its junction with the Shawsheen. Framingham sheet.

KIMBALL POND.—Essex County; 1 mile north of Merrimacport and 2 miles west of Amesbury; inlet, a stream about 1 mile long flowing in from the northwest; outlet, a small stream to Powow River (tributary to the Merrimack); altitude, 100 feet above sea level; length, three-fourths mile; maximum width, one-half mile. Newburyport sheet.

KING BROOK.—Franklin County; rises in Plainfield Pond north of West Mountain; flows northeastward 1 mile, then northerly 2 miles into Chickley River (tributary through Deerfield River to the Connecticut); tributary, Basin Brook. Hawley sheet.

KING POND.—Plymouth County; town of Plymouth; 2 miles southwest of Billington Sea. Plymouth sheet.

KINGS BROOK.—Hampden County; rises in the swamp east of Pattaquattic Hill; flows west of south 1½ miles, then southeastward 2½ miles into Quaboag River (tributary through Chicopee River to the Connecticut) about a mile south of West Brimfield. Palmer sheet.

KINGSBURY POND.—Norfolk County; a small pond lying 1 mile south of Charles River and 2 miles southeast of Medway. Franklin sheet.

KINGS POND.—Bristol County; town of Raynham; an expansion of Pine Swamp Brook (tributary through Taunton River to Narragansett Bay); north of the village of Raynham. Taunton sheet.

KINNEY BROOK.—Hampshire and Berkshire counties; rises 1½ miles west of Ringville; flows southeasterly 5 miles to Dayville, where it enters Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Chesterfield sheet.

KITCHEN BROOK.—Berkshire County, rises on the north slope of Rounds Rock, in New Ashford; flows southeastward 3½ miles to Cheshire, where it enters Hoosic River (tributary to the Hudson). Greylock sheet.

KNEELAND BROOK.—Worcester County; rises 1½ miles north of Crystal Lake in the town of Gardner; flows southwestward into Otter River (tributary through Millers River to the Connecticut) west of the city of Gardner; principal tributary, Wilder Brook, joins it in a pond just above its mouth. Fitchburg and Winchendon sheets.

KNOP POND.—Middlesex County; south end of Cow Pond Meadows; 2½ mile southeast of Groton; inlets from Springy Pond; outlet, a stream about one-eighth mile long flowing northwestward into Cow Pond Brook (tributary through Salmon Brook to the Merrimack) in Cow Pond Meadows. Groton sheet.

KONKAPOT BROOK.—Berkshire County; rises in the eastern part of the town of Great Barrington; flows northward 6 miles into Housatonic River in the southern part of the town of Stockbridge; principal tributary, Agawam Brook. Sheffield and Pittsfield sheets.

KONKAPOT RIVER.—Berkshire County; rises in Lake Garfield, in the town of Monterey; flows southwesterly through Monterey and New Marlboro to the village of Sodom in North Canaan, Conn., where it turns and flows northwesterly into Berkshire County, Mass., and joins Housatonic River near Ashley Falls in the southeastern part of the town of Sheffield; length below Lake Garfield, about 18 miles; principal tributaries, Rawson Brook, and stream from Lake Buell. The drainage basin lies almost entirely in Massachusetts. Sandisfield and Sheffield sheets.

LABOR IN VAIN CREEK.—Bristol County; town of Somerset; a stream about 3 miles long flowing southeastward into Taunton River (tributary to Narragansett Bay) at Somerset. Taunton sheet.

LABOR IN VAIN CREEK.—Essex County; rises 1 mile southeast of Ipswich and flows generally northward 1½ miles into Ipswich River; marshy throughout its course. Salem sheet.

LAGOON POND.—Dukes County; Marthas Vineyard; between Cottage City and Vineyard Haven; the bar across the north end of the pond is broken in several places so that the pond is tidal. Marthas Vineyard sheet.

LANDHAM BROOK.—Middlesex County; rises about 1½ miles northwest of Framingham Center, at altitude about 260 feet above sea level; flows eastward 1½ miles, then generally northward 2½ miles to its junction with Hop Brook to form Wash Brook (tributary through Sudbury River to Concord River and thus to the Merrimack) on the south slope of Green Hill near South Sudbury; swampy near its mouth; head of stream called Hop Brook on the map. Framingham sheet.

LANE POND.—Worcester County; one-half mile east of Turkey Hill, near the divide between waters flowing to the Nashua (and thus to the Merrimack through Shirley Reservoir) and Mulpus Brook. Groton sheet.

LARKUM POND.—Berkshire County; town of Otis; just north of the western arm of Otis Reservoir; outlet, a stream one-eighth mile flowing southwesterly into the stream connecting Otis Reservoir with the head of Farmington River (tributary to the Connecticut); small. Sandisfield sheet.

LARNED POND.—Worcester County; town of Dudley; inflowing stream drains a number of small ponds including Hayden Pond; outlet through Merino Pond to French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

LAUREL LAKE.—Berkshire County; towns of Lenox and Lee; outlet, a stream a mile long flowing southeastward into Housatonic River at Lee. Pittsfield sheet.

LAWRENCE BROOK.—Cheshire County, N. H., Worcester County, Mass.; formed in the town of Fitzwilliam, N. H., by the union of streams flowing from Little Monadnock Mountain and The Pinnacle; flows southward (as Kemp Brook) to Meadow Pond, from which it emerges as Lawrence Brook and flows southward and southwestward to its junction with the East Branch of Tully River (tributary through Tully River to Millers River and thus to the Connecticut) in the northwestern part of the town of Royalston; length to head of Kemp Brook, 13 miles; principal tributary in Massachusetts, Beaver Brook. Monadnock and Winchendon sheets.

LAWRENCE BROOK.—Middlesex County; rises 5 miles northwest of Lowell at altitude 320 feet above sea level; flows southwestward 2½ miles into Merrimack River; principal tributary, a stream from Tyngs Pond. Lowell sheet.

LAWRENCE POND.—Barnstable County; one of a group of ponds north of the village of Farmersville. Barnstable sheet.

LEAD MINE BROOK.—Worcester County; rises on the west slope of Lead Mine Mountain; flows southwesterly through Lead Mine Pond into Mashapaug Pond in the northeastern part of Union township, Conn.; the outlet of Mashapaug Pond is a stream flowing northwestward into Hamilton Reservoir (outlet through Holland Pond to Mill Brook and thus through Quinebaug, Shetucket, and Thames rivers to Long Island Sound) in the southeastern part of the town of Holland, Hampden County. Brookfield sheet.

LEAD MINE POND.—Worcester County; on the southwest slope of Lead Mine Mountain; outlet, Lead Mine Brook to Mashapaug Pond (in Connecticut), thence northward through Hamilton Reservoir to Holland Pond and Mill Brook to Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). Brookfield sheet.

LEARNED POND.—Middlesex County; just north of South Framingham, one-half mile southeast of Sudbury River (tributary through Concord River to the Merrimack); about 160 feet above sea level. Framingham sheet.

LEBANON BROOK.—Worcester County; town of Southbridge; rises in the northwestern part of the town of Woodstock, Windham County, Conn.; flows southeastward through a series of small ponds about 2 miles, thence northeastward 7 miles to its junction with Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at the village of Sandersville. Brookfield sheet.

LEECH POND.—Plymouth County; town of Plymouth; 1¼ miles west of the city of Plymouth; very small. Plymouth sheet.

LEE POND.—Berkshire County; town of Mount Washington; outlet, Lee Pond Brook to Bashbish Brook (tributary through Rocliff Jansen Kill to the Hudson); very small. Sheffield sheet.

LEE POND BROOK.—Berkshire County; town of Mount Washington; rises in Lee Pond; flows northwestward 2½ miles into Bashbish Brook (tributary through Rocliff Jansen Kill to the Hudson). Sheffield sheet.

LEES RIVER.—Bristol County; a tidal channel from Mount Hope Bay extending from the bay to Swansea. Fall River sheet.

LEONARDS POND.—Plymouth County; town of Rochester; inlets, East and West branches of Sippicon River, which unite at the head of the pond; outlet, Sippicon River to Weweantic River and thus to Buzzards Bay. Middleboro and New Bedford sheets.

LEWIN BROOK.—Bristol County; town of Swansea; a stream about 2½ miles long flowing southwestward into Lees River (tributary to Mount Hope Bay and thus to Narragansett Bay) at Swansea. Taunton and Fall River sheets.

LEWIS POND.—Barnstable County; 1¼ miles north of Hyannis. Barnstable sheet.

LEWIS POND.—Barnstable County; town of Yarmouth; in the marsh west of the mouth of Parkers River (tributary to Nantucket Sound). Yarmouth sheet.

LILLY POND.—Barnstable County; a small pond 1½ miles northeast of South Yarmouth; connected with Flax Pond by a marsh. Yarmouth sheet.

LILY POND.—Barnstable County; town of Barnstable; a small pond lying immediately north of the Old Colony Railroad track. Barnstable sheet.

LILY POND.—Franklin County; town of Northfield; a small pond connected by a westward flowing stream with Bennett Brook (tributary to Connecticut River). Warwick sheet.

LILY POND.—Norfolk County; town of Cohasset; outlet, a very short stream flowing southward into Bound Brook, which discharges into the ocean through Cohasset Harbor. Abington sheet.

LITTLE ALUM POND.—Hampden County; town of Brimfield; outlet, a stream 2 miles long flowing east and then south into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) at the village of East Brimfield. Brookfield sheet.

LITTLE CHAUNCEY POND.—Worcester County; one-half mile north of Chauncey Pond, with which it is connected by Stirrup Brook; outlet, Stirrup Brook (tributary through Assabet River to the Concord and thus to the Merrimack) through Bartlett Pond; altitude about 270 feet. Marlboro sheet.

LITTLE CLEAR POND.—Plymouth County; town of Plymouth; a small pond one-half mile northeast of East Carver; east of and very near to Darby Pond. Plymouth sheet.

LITTLE CLIFF POND.—Barnstable County; 1¼ miles west of South Orleans; a marsh connects the west end of the pond with Cliff Pond and Long Pond. Wellfleet sheet.

LITTLE CREEK.—Plymouth County; town of Marshfield; rises near Marshfield Center station; flows northward and northeastward into the tidal marsh through which North River discharges into the bay; about 2 miles long. Duxbury sheet.

LITTLE CREEK POND.—Plymouth County; town of Duxbury; near head of South River. Duxbury sheet.

LITTLE FIVEMILE POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southern part of the township west of Agawam River. Plymouth sheet.

LITTLE HERRING POND.—Plymouth County; southeastern part of town of Plymouth; outlet, Monument River through Great Herring Pond to Buzzards Bay; about 1 mile long; the stream connecting Little Herring with Great Herring Pond is about one-fourth mile long. Plymouth sheet.

LITTLE ISLAND POND.—Plymouth County; town of Plymouth; one-fourth mile southwest of Beaver Dam Pond, into which it discharges by a northeastward flowing stream. Plymouth sheet.

LITTLE MIOXES POND.—Nantucket County; Nantucket Island; one-half mile southeast of Great Mioxes Pond; one of the numerous elongated ponds on the south shore of the island; separated from the ocean by a barrier beach. Nantucket sheet.

LITTLE POND.—Barnstable County; town of Falmouth; a baylike pond connected with Vineyard Sound by a narrow channel; one-half mile east of Falmouth Heights. Falmouth sheet.

LITTLE POND.—Middlesex County; a short distance west of Somerville; inlets, Winns Brook from the west and a small stream from Spy Pond to the north; natural outlet, Little River to Alewife Brook (tributary to Mystic River); formerly part of the reservoir system of Boston and vicinity. Boston sheet.

LITTLE POND.—Norfolk County; west of South Braintree; outlet, a stream one-half mile long flowing from the southwest end of southeastward into Weymouth Fore River. Dedham sheet.

LITTLE POND.—Plymouth County; town of Plymouth; outlet, a stream one-half mile long flowing southwestward into Billington Sea; outlet, Town Brook to Plymouth Harbor. Plymouth sheet.

LITTLE POND.—Worcester County; a small pond 2 miles northwest of Hudson, at altitude 320 feet above sea level; outlet, a small stream flowing southward into a much larger stream (unnamed on the map), which takes a southeasterly course, passes through a pond at Hudson, and discharges into Assabet River (tributary through Concord River to the Merrimack). Marlboro sheet.

LITTLE POND.—Worcester County; town of Mendon; an expansion of Meadow Brook, which flows through it to West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

LITTLE PUDDING BROOK.—Plymouth County; town of Pembroke; a stream about a mile long flowing northwestward into Herring Brook (tributary to North River). Abington sheet.

LITTLE QUITTACAS POND.—Plymouth County; a pond one mile long by three-fourths mile wide lying one-eighth mile west of the southern half of Great Quittacas Pond, with which it is connected by a short eastward flowing stream; natural outlet of the Quittacas ponds, Mattapoisett River; the ponds are used by the city of New Bedford as a source of municipal water supply. Middleboro sheet.

LITTLE RIVER.—Bristol County; a tidal channel in the marsh one-half mile east of Slocums River in the town Dartmouth; connected with Buzzards Bay. New Bedford sheet.

LITTLE RIVER.—Essex County; rises about one-half mile west of Newburyport, at altitude about 50 feet above sea level; flows generally southeastward 5½ miles into Parker River (tributary to Plum Island River and the Atlantic Ocean) near Newbury Old Town. Newburyport sheet.

LITTLE RIVER.—Essex County; rises in a swamp about one-half mile south of West Gloucester; flows northward one-half mile, then generally eastward 1½ miles to its junction with Squam River; just east of West Gloucester it terminates in a tidewater channel. Gloucester sheet.

LITTLE RIVER.—Hampshire County; formed in the town of Worthington by the junction of Wards and Watts streams; Wards stream, the continuation of Little River, rises 1 mile northwest of Worthington Corners; flows southeastward 3 miles, then southward 1½ miles to Ringville, where it receives Watts stream; from Ringville Little River flows southeasterly 5½ miles to its junction with Westfield River (tributary to the Connecticut); length to head of Wards stream, 10 miles. Chesterfield sheet.

LITTLE RIVER.—Rockingham County, N. H., Essex County, Mass.; rises in the town of Hampstead in Rockingham County, N. H., about 280 feet above sea level; after flowing northward about 1½ miles it takes a southeastward course for about 4 miles, then flows southward 3 miles into Essex County, Mass., where it resumes its southeastward course for 3½ miles and discharges into Merrimack River at Haverhill; principal tributary in Massachusetts, Fishing River. Haverhill sheet.

LITTLE RIVER.—Worcester County; towns of Charlton and Oxford; rises about 3 miles north of Charlton depot; flows southeastward to a point 1½ miles below Millward, then southward through Slaters Reservoir to Buffumville, then eastward into French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound); length, about 10 miles. The river passes through a number of small ponds and receives the drainage from a number of larger ponds including Gore Pond, Pierpoint Meadow Pond, and South Charlton Reservoir. Webster sheet.

LITTLE SANDY BOTTOM POND.—Plymouth County; town of Pembroke; one-half mile south of Great Sandy Bottom Pond, into which it discharges by a northward flowing stream. Abington sheet.

LITTLE SANDY POND.—Barnstable County; town of Yarmouth; 1½ miles northeast of Hyannis; outlet, a stream flowing southwest and south into Lewis Bay on Nantucket Sound. Barnstable sheet.

LITTLE SANDY POND.—Plymouth County; town of Plymouth; one-fourth mile south of Sandy Pond and three-fourths mile east of White Island Pond. Plymouth sheet.

LITTLE SMELT POND.—Plymouth County; town of Kingston; north of Monks Hill; discharges westward into Smelt Pond; outlet, Smelt Brook to Jones River (tributary through Kingston Bay to Massachusetts Bay). Plymouth sheet.

LITTLE SOUTH POND.—Plymouth County; town of Plymouth; north of Great South Pond (natural outlet through Eel River to Plymouth Harbor), with which it is connected by a short southward flowing stream. Used as part of water supply of city of Plymouth. Plymouth sheet.

LITTLE SPECTACLE POND.—Worcester County; one-fourth mile northwest of Spectacle Pond, into which it discharges and which has outlet to North Branch of Nashua River (tributary through Nashua River to the Merrimack). Groton sheet.

LOCKE BROOK.—Hillsboro County, N. H., Middlesex County, Mass.; rises in Hoar Pond in the southeastern part of the town of New Ipswich, Hillsboro County, N. H., at altitude about 1,000 feet above sea level; flows southeastward about 6 miles into Ash Swamp, which is drained through Squannacook River to Nashua River and thus to the Merrimack. Fitchburg sheet.

LOCK POND.—Franklin County; town of Shutesbury; east of Lock Village; three inflowing streams; outlet, a stream 2 miles long flowing westward 1 mile and southwestward 1 mile into Saw Mill River (tributary to the Connecticut). Warwick and Belchertown sheets.

LOCUST POND.—Middlesex County; northwest base of Locust Hill, 1 mile northwest of Tyngsboro; inflowing stream, about 1¼ miles long; outlet, a stream one-half mile long flowing northeastward into Merrimack River 1 mile north of Tyngsboro. Lowell sheet.

LONG CREEK.—Barnstable County; a tidal channel in the marsh back of Spring Hill Beach. Barnstable sheet.

LONG DUCK POND.—Plymouth County; town of Plymouth; one-half mile west of Little Herring Pond. Plymouth sheet.

LONG MEADOW BROOK.—Hampden County; rises in a small pond in the southern part of the town of Longmeadow; flows northward 1 mile, then irregularly westward 4 miles into Connecticut River. Springfield sheet.

LONG MEADOW BROOK.—Worcester County; town of Rutland; rises in Long Pond near White Hall; flows northwestward 2½ miles into Ware River (tributary through Chicopee River to the Connecticut), 2½ miles southwest of North Rutland. Worcester sheet.

LONG PLAIN BROOK.—Franklin and Hampshire counties; rises in the town of Leverett on the southeast slope of Mount Toby; flows in general southwestward to Connecticut River; length, 7 miles. Northampton sheet.

LONG POND.—Barnstable County; between Brewster and Harwich; outlet, through Herring River to Nantucket Sound; 2½ miles long and 1 mile in maximum width; altitude, about 20 feet above sea level. Yarmouth sheet.

LONG POND.—Barnstable County; half a mile southwest of Yarmouth Port near Dennis Pond. Barnstable sheet.

LONG POND.—Barnstable County; southeast of Cliff Pond, with which its lower end is connected by a marsh. Wellfleet sheet.

LONG POND.—Barnstable County; town of Barnstable; one-half mile south of Great Pond. Barnstable sheet.

LONG POND.—Barnstable County; town of Barnstable; 1½ miles west of Cotuit Ponds. Barnstable sheet.

LONG POND.—Barnstable County; town of Falmouth; 1¼ miles north of the city of Falmouth; used as municipal supply by Falmouth. Falmouth sheet.

LONG POND.—Barnstable County; town of Wellfleet; a mile northeast of the village of Wellfleet; connected with Great Pond by a short stream. Wellfleet sheet.

LONG POND.—Barnstable County; town of Yarmouth; three-fourths mile northwest of South Yarmouth; a narrow pond about a mile long. Yarmouth sheet.

LONG POND.—Berkshire County; northwestern part of the town of Great Barrington; natural outlet, Long Pond Brook (tributary through Seekonk Brook to Green River and thus to the Housatonic). The water is used for the municipal supply of the village of Housatonic in the town of Great Barrington. Sheffield sheet.

LONG POND.—Bristol and Plymouth counties; town of Lakeville; principal inlets; Fall Brook (head of Namasket River) and stream from Elders Pond; outlet to Assawompsett Pond and thus through Namasket River and Taunton River to Narragansett Bay. The pond is about 3 miles long, more than one-half mile in maximum width, and contains several small islands. Middleboro sheet.

LONG POND BROOK.—Berkshire County; western part of the town of Great Barrington; rises in Long Pond; flows southeastward 1 mile, then southwestward 1 mile into Seekonk Brook (tributary through Green River to the Housatonic). Sheffield sheet.

LONG POND.—Franklin County; town of Erving; a small pond discharging by an eastward flowing stream to Harris Pond on Moss Brook (tributary through Millers River to the Connecticut). Warwick sheet.

LONG POND.—Hampden County; town of Blandford; a short distance east of the Berkshire-Hampden county boundary; outlet, a stream flowing into Pebble Brook (tributary to Springfield reservoir on Westfield Little River) at North Blandford. *See* Westfield Little River. Sandsfield sheet.

LONG POND.—Hillsboro County, N. H., Middlesex County, Mass.; about two-thirds of the pond lies in Massachusetts; outlet through Double Brook to Beaver Brook and thus to the Merrimack. Lowell sheet.

LONG POND.—Middlesex County; 1 mile south of Littleton Common on the south slope of Long Pond Brothers; altitude 260 feet above sea level; inlet, a stream one-half mile long, unnamed on the map; outlet a stream, also unnamed on the map, flowing southward 3½ miles, through Fort Pond, into a stream called on the map Fort Pond Brook. The unnamed stream is considered the head of Fort Pond Brook, as it drains a larger area than does the tributary called on the map Fort Pond Brook. Lowell and Framingham sheets.

LONG POND.—Middlesex County; 1 mile southwest of Tewksbury Center, at altitude about 100 feet above sea level; outlet, a short stream about one-half mile long flowing southward into Content Brook (tributary through Shawsheen River to the Merrimack; length, about three-fourths mile; width, about one-fourth mile. Lowell and Lawrence sheets.

LONG POND.—Middlesex County; 2 miles northeast of Ayer; between Snake and Rocky Hills; one inflowing stream; marshy; outflowing stream passes through Sandy Pond into the pond south of Ayer and thus through Nonacoicus Brook to Nashua River (tributary to the Merrimack); altitude, 230 feet above sea level. Groton sheet.

LONG POND.—Nantucket County; Nantucket Island; western end; a narrow pond which extends within half a mile of Nantucket Sound on the north and one-eighth mile from the ocean on the south. Nantucket sheet.

LONG POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the west-central part of the township. Plymouth sheet.

LONG POND.—Plymouth County; town of Plymouth; 3 miles south of Telegraph Hill; inlets from two small ponds, one on the north and the other on the south; 1 mile long. Plymouth sheet.

LONG POND.—Plymouth County; town of Rochester; less than one-eighth mile southeast of Snipatuit Pond. Middleboro sheet.

LONG POND.—Plymouth County; two small ponds connected by a short stream; the northerly pond is in the town of Plymouth; the southerly in Wareham; neither pond is conspicuously long, and the name may be applied to either or both. Plymouth sheet.

LONG POND.—Worcester County; principal inlets, streams from Baker Pond and Alum Pond; outlet, a stream one-eighth mile long flowing southward into Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) about a mile west of Fiskdale. The pond is about 2 miles long and nearly half a mile in maximum width. Brookfield sheet.

LONG POND.—Worcester County; town of Royalston; on East Branch of Tully River (tributary through Tully River to Millers River and thus to the Connecticut). In addition to the East Branch of Tully River the Pond receives Boyce Brook. Winchendon sheet.

LONG POND.—Worcester county; town of Rutland; west of the village of West Rutland; inlet, stream from Demond Pond; outlet, Long Meadow Brook to Ware River (tributary through Chicopee River to the Connecticut). The pond is about 2 miles long and one-eighth mile wide. Worcester sheet.

LOON POND.—Hampden County; a small pond 1½ miles south of Chicopee River (tributary to the Connecticut). Palmer and Springfield sheets.

LOON POND.—Plymouth County; town of Lakeville; one-fourth mile northeast of Elders Pond. Middleboro sheet.

LOUT POND.—Plymouth County; town of Plymouth; one-fourth mile east of Billington Sea. Plymouth sheet.

LOVE CREEK.—Barnstable County; town of Yarmouth; a tidal channel in the marsh north of Yarmouth Port. Barnstable and Yarmouth sheets.

LOVELLS POND.—Barnstable County; town of Barnstable; one-fourth mile east of Santuit Pond; outlet, a stream 2 miles long flowing southeastward into Osterville Harbor, Nantucket Sound. Barnstable sheet.

LOWER MASSAPOAG POND. *See* Massapoag ponds.

LOWER POND.—Hampshire County; one of a group of three ponds in the town of Belchertown drained by Bachelor Brook (tributary to the Connecticut). Belchertown sheet.

LUBBER BROOK.—Middlesex County; rises 1½ miles southwest of Wilmington Center, at altitude 80 feet above sea level; flows generally westward about 1½ miles, northeastward 3½ miles, then southeastward 1½ miles into Ipswich River. Lawrence sheet.

LULU BROOK.—Berkshire County; rises in the eastern part of the town of Hancock; flows southeastward across the southwestern corner of Lanesboro into Pittsfield and enters the northern arm of Lake Onota (outlet Onota Brook to west branch of Housatonic River and thus to the Housatonic); length, 3 miles. Berlin and Pittsfield sheets.

LYNDE BROOK.—Worcester County; rises on the southwest slope of Asnebumskit Hill; flows southeastward and joins Kettle Brook (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay) in the pond at Cherry Valley; passes through Lynde Brook Reservoir. Worcester and Webster sheets.

LYNDE BROOK RESERVOIR.—Worcester County; north of Cherry Valley; inlet and outlet, Lynde Brook (tributary through Kettle Brook to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Worcester sheet.

LYONS POND.—Hampden County; town of Ludlow; 1½ miles north of Ludlow Center; a very small pond on a tributary of Higher Brook (tributary through Chicopee River to the Connecticut). Palmer sheet.

MADEQUECHAM POND.—Nantucket County; Nantucket Island; south shore; separated from the ocean by a narrow beach. Nantucket sheet.

MALDEN BROOK.—Worcester County; rises about 1¼ miles northwest of Summit station on the Fitchburg & Worcester Railroad, at altitude about 820 feet above sea level; flows somewhat east of north into upper end of Wachusett Reservoir; length, about 5 miles. Worcester sheet.

MALDEN RIVER.—Middlesex County; rises just north of Melrose and flows eastward about 1 mile, then southward about 9 miles into Mystic River; drains Crystal Pond at Melrose. Boston sheet.

MANCHAUG POND.—Worcester County; northwest of the village of Manchaug; inlet and outlet, Mumford River (tributary to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay); nearly 2 miles long; one-half mile wide. Webster sheet.

MANHAN BROOK.—Hampshire County; head of Southwest Branch of main Manhan River (tributary to the Connecticut). Chesterfield and Granville sheets.

MANHAN RIVER.—Hampshire County; rises on the west slope of Mount Pisgah; flows southeastward 10 miles, thence northeastward 10 miles to its junction with the Connecticut. The headwater stream, called Manhan Brook, joins the Southwest Branch, as the river is called above Russellville, in the western part of the town of Southampton; principal tributary of the river is the North Branch, which drains the towns of Westhampton, Northampton, and a small area in Southampton. Chesterfield, Northampton, Granville, and Springfield sheets.

MANHAN RIVER, NORTH BRANCH.—Rises about 3 miles northwest of Hanging Mountain; flows southeastward 9 miles into Manhan River (tributary to the Connecticut) a mile west of Easthampton; principal tributaries, North Brook (considered the head of the stream) and Sodden Brook. Chesterfield and Northampton sheets.

MANHAN RIVER, SOUTHWEST BRANCH.—*See* Manhan River.

MANNING BROOK.—Berkshire County; town of Florida; a stream 2 miles long, flowing southeastward into Cold River (tributary through Deerfield River to the Connecticut) one-half mile below the mouth of Tanner Brook. Greylock and Hawley sheets.

MANSFIELD POND.—Berkshire County; a small pond northwest of the village of Great Barrington; outlet, a stream one-half mile long flowing eastward into Housatonic River. Sheffield sheet.

MAPLE MEADOW BROOK.—Middlesex County; rises about 1½ miles west of North Woburn at altitude 140 feet above sea level; flows eastward 1 mile, then northward 3 miles into Ipswich River. Lawrence sheet.

MAPLE SPRING BROOK.—Plymouth County; rises in the southern part of the town of Plymouth; flows southward 3 miles and discharges into the pond which is an expansion of Agawam River (tributary through Wareham River to Buzzards Bay) north of East Wareham. Plymouth sheet.

MAQUAN POND.—Plymouth County; town of Hanson; outlet, a stream about one-half mile long flowing southeastward into Indian Head Pond (outlet, Indian Head Brook to Indian Head River and thus through North River to Massachusetts Bay). Abington sheet.

MARES POND.—Barnstable County; town of Falmouth; about halfway between East and West Falmouth. Falmouth sheet.

MARSH BROOK.—Berkshire County; rises in the town of Lenox a mile southeast of Lenox Mountain; flows southward 2½ miles, then westward one-half mile into Stockbridge Bowl, from which it flows southward to Housatonic River; length below Stockbridge Bowl, about 3 miles; to extreme head, 7 miles. Pittsfield sheet.

MARSH POND.—Berkshire County; town of Egremont; one inlet; outlet, a stream a mile long flowing southeastward into Karner Brook (head of Hubbard Brook, which is tributary through Schenob Brook to the Housatonic). Sheffield sheet.

MARTIN POND.—Middlesex County; 1 mile northeast of Groton between Chestnut Hills and Gibbet Hill; outlet, Martins Pond Brook to Cow Pond Brook and thus through Massapoag ponds and Salmon Brook to the Merrimack; altitude, 310 feet above sea level. Groton sheet.

MARTINS BROOK.—Middlesex County; rises in Martins Pond, 2½ miles northwest of North Reading, at altitude 80 feet above sea level; flows southwestward 1 mile, then generally eastward 2 miles into Ipswich River. Lawrence sheet.

MARTINS POND BROOK.—Middlesex County; rises in Martin Pond at altitude 310 feet above sea level; flows southeastward about 2½ miles into Cow Pond Brook, which discharges through Massapoag ponds to Salmon Brook and thus to the Merrimack (in Cow Pond Meadows). Groton sheet.

MARTINS POND.—Middlesex and Essex counties; in a swamp 2½ miles northwest of Reading; inlet, Skug River; outlet, Martins Brook to Ipswich River; altitude 80 feet above sea level; length, one-half mile; maximum width, one-fourth mile. Lawrence sheet.

MARYS POND.—Plymouth County; town of Rochester; one-half mile east of Leonards Pond on Sippicon River. Middleboro sheet.

MASHPEE POND.—Barnstable County; at head of Mashpee River (tributary to Nantucket Sound); a large pond of very irregular outline; the upper arm of the pond is called Wakeby Pond. Barnstable sheet.

MASHPEE RIVER.—Barnstable County; rises in Mashpee Pond; flows southward and southeastward into Poponesset Bay through which it is connected with Nantucket Sound; length to head of Wakeby Pond (the northern arm of Mashpee Pond), about 8 miles. Barnstable sheet.

MASON BROOK.—Hillsboro County, N. H., Middlesex County, Mass.; rises in the western part of the town of Mason in Hillsboro County, N. H., at altitude about 940 feet above sea level; flows somewhat east of south about 6 miles into Ash Swamp, which is drained through Squannacook River to Nashua River and thus to the Merrimack. Peterboro and Fitchburg sheets.

MASSAPOAG POND.—Norfolk County; town of Sharon; several small inflowing streams; outlet, Canton River to Neponset River; altitude, about 260 feet; length, about 1 mile; maximum width, about one-half mile. Dedham sheet.

MASSAPOAG PONDS.—Middlesex County; about 3 miles northeast of Groton; three ponds connected by streams about one-fourth mile long; inlet, Cow Pond Brook (the head of Salmon Brook); outlet, Salmon Brook to Merrimack River. The upper pond lies just below the 200-foot contour. The lower pond is just above the 160-foot contour. From the head of the upper pond to the outlet of the lower pond the distance is about 2½ miles. The middle pond is the longest and is called Massapoag Pond. Groton and Lowell sheets.

MASSAPOAG POND.—Worcester County; southeast slope of Nichols Hill, 1 mile west of Shirley reservoir; inlet, a stream from Unchechewhaton Pond; outlet, a stream about 1½ miles long flowing northeastward into Catacoonamug Brook (tributary through Shirley reservoir) to Nashua River and thus to the Merrimack. Groton sheet.

MATFIELD RIVER.—Norfolk and Plymouth counties; rises in the swamp northeast of Stoughton; flows southeastward about 15 miles and unites with Town River to form Taunton River; called Salisbury Plain River and Saulsbury Brook above junction with Beaver Brook; principal tributaries, Beaver Brook, Meadow Brook, and Satucket River. Abington and Dedham sheets.

MATTAPOISETT RIVER.—Plymouth County; the natural outlet of Great Quittacas Pond; from this pond the stream flows southeastward to Snipatuit Pond, then southward to Mattapoisett Harbor where it enters Buzzards Bay; length, about 12 miles. Great and Little Quittacas ponds are used by the city of New Bedford as a source of municipal water supply. Middleboro and New Bedford sheets.

MAXEY POND.—Nantucket County; Nantucket Island; one-half mile north of Hummock Pond; 1½ miles west of the city of Nantucket; small. Nantucket sheet.

MAYNARD BROOK.—Worcester County; town of Oakham; rises 1 mile southwest of the village of Oakham; flows southeastward 2½ miles into Fivemile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut) one-half mile north of Brooks Pond. Barre sheet.

MCCARD BROOK.—Franklin County; rises on the southeast slope of Ball Mountain; flows west of south 2½ miles into Mill Brook (tributary through Green River to Deerfield River and thus to the Connecticut). Greenfield sheet.

MEADOW BROOK.—Bristol County; rises 2 miles east of North Rehoboth; flows east of north into Birch Brook (tributary through Threemile River to Taunton River and thus to Narragansett Bay); length, 2½ miles. Taunton sheet.

MEADOW BROOK.—Hampshire County; rises on Walnut Hill in the town of Plainfield; flows southward 5 miles to Cummington, where it enters Westfield River (tributary to the Connecticut). Hawley and Chesterfield sheets.

MEADOW BROOK.—Middlesex County; rises on northwest slope of Snake Meadow Hill, at altitude 220 feet above sea level; flows irregularly northeastward into Keyes Pond (outlet through Keyes Brook to Stony Brook and thus to the Merrimack; length about 2 miles. Lowell sheet.

MEADOW BROOK.—Plymouth County; town of East Bridgewater; rises about 2 miles south of Whitman; flows southwesterly 3½ miles to its junction with Matfield River (tributary through Taunton River to Narragansett Bay); flows through several small ponds. Abington sheet.

MEADOW BROOK.—Worcester County; rises in Nipmuck Pond a mile southwest of the village of Mendon; flows southwestward 2 miles, then westward about a mile into West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); tributary, Wigwam Brook. Blackstone sheet.

MEADOW BROOK.—Worcester County; 2 miles southwest of New Braintree; a stretch of Mill Brook (tributary through Wickaboag Pond to Quaboag River and thus through Chicopee River to the Connecticut) between the ponds into which Sucker Brook discharges and the head of Mill Brook; 1½ miles long; Barre sheet.

MEADOW POND.—Dukes County; Marthas Vineyard; north of Cottage City; separated from the sound by a narrow beach. Marthas Vineyard sheet.

MEETING HOUSE POND.—Worcester County; a pond about a mile long, which lies south of Westminster and discharges by a stream that flows southeastward into Grass Pond (tributary to Whitman River, which discharges through North Branch of Nashua River to Nashua River and thus to the Merrimack; altitude, 1,010 feet above sea level; fall of outflowing stream, 140 feet. Fitchburg sheet.

MELVILLE LAKE.—Berkshire County; a mile south of Pittsfield; principal inlet, Wanpenum Brook; outlet, Wanpenum Brook to Housatonic River; small. Pittsfield sheet.

MENEMSHA POND.—Dukes County; Marthas Vineyard; Gay Head; the water of Vineyard Sound enters the pond at its northeast end; a southern arm of the pond (Nashaquitsa) extends within an eighth of a mile of the ocean at the south. The main pond is more than a mile long (northeast-southwest) and about a mile wide. Gay Head sheet.

MERINO POND.—Worcester County; town of Dudley; inlets, streams from Larned Pond and Peter Pond; outlet, a stream one-eighth mile long flowing eastward into French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

MERRIMACK RIVER.—New Hampshire, Massachusetts; formed near Franklin, N. H., by union of Pemigewasset and Winnepesaukee rivers; Pemigewasset River, considered the head of the main stream, rises in Profile Lake near Franklin, N. H., between 50 and 60 miles north of Franklin and less than 10 miles from Mount Washington, at altitude approximately 2,000 feet above sea level. Below Franklin the Merrimack flows southward about 60 miles, crosses into Massachusetts, and near the city of Lowell turns abruptly, flows northeastward about 40 miles to Newburyport, where it enters the ocean. Total length to head of Pemigewasset River, about 165 miles; drainage area, 5,010 square miles, of which about 1,200 square miles is in Massachusetts, 211 square miles lying in the Nashua, Sudbury, and Lake Cochituate drainage areas from which water is permanently diverted for the supply of Boston and vicinity.

Important tributaries of the Merrimack, other than headwater streams, are Contoocook, Suncook, Piscataquog, Souhegan, and Nashua rivers. Of these only the Nashua lies principally in Massachusetts.

Elevation of river at Franklin, about 270 feet. Upper portion of basin is rough and mountainous and very largely in forests; below Franklin, country drained is rolling and much of it is farm land.

The river flows in reaches of moderate slope separated by fall over rock ledges. It is navigable as far as Haverhill, and for small boats as far as Lawrence.

Mean annual rainfall in basin, about 42 inches, ranging from about 46 inches at Lowell to 38 inches at Plymouth, but it is probably much greater in the mountainous region near the head of the Pemigewasset than elsewhere in the area.

The combined area of lakes and ponds in the drainage basin is approximately 183 square miles, of which about 105 square miles is contained in Lake Winnepesaukee. The storage on many of the lakes is controlled by users of water power on the river and greatly improves the low-water flow. In a general way the most favorable storage and power sites on the Merrimack are being utilized, but on the tributaries, especially on the Pemigewasset and its tributaries, there is a large amount of unutilized fall. Gaging stations: Pemigewasset River at Plymouth, N. H., 1886–1915; Merrimack River at Franklin Junction, N. H., 1903–1915; Garvins Falls, N. H., 1904–1915; Lowell, Mass., 1848–1860, 1865–1915, and Lawrence, Mass., 1880–1915. Authority: Water-Supply Papers of U. S. Geological Survey; Manchester, Lowell, Lawrence, Haverhill, and Newburyport sheets. *See also* pages 192–282 of this report.

Miacomet Pond.—Nantucket County; Nantucket Island; one of the numerous elongated ponds on the south shore of the island; about a mile long; separated from the ocean by a barrier beach. Nantucket sheet.

Micajah Pond.—Plymouth County; town of Plymouth; three-fourths mile south of the west end of Billington Sea. Plymouth sheet.

Middle Pond.—Hampshire County; one of a group of three ponds in the town of Belchertown drained by Bachelor Brook (tributary to the Connecticut). Belchertown sheet.

Mile Brook.—Essex County; formed by the junction of Howlett and Pye brooks, about one-half mile north of Topsfield; flows southeastward 2½ miles into Ipswich River; swampy throughout much of its course. Salem sheet.

Mile Brook.—Plymouth County; town of Kingston; a stream about a mile long flowing southward into the north end of Blackwater Pond on Halls Brook (tributary through Jones River to Kingston Bay, a branch of Massachusetts Bay). Duxbury sheet.

Miles River.—Essex County; rises in a swamp about 3 miles northeast of Beverly; takes an irregular course westward for 4 miles, then flows generally east of north for 7 miles into Ipswich River about 1 mile southwest of Ipswich; through two small tributaries it drains Wenham Lake and Beaver Pond. Salem sheet.

Mill Brook.—Bristol County; town of Fall River; rises north of Copecut Hill; flows west of north into Assonet River (tributary through Taunton River to Narragansett Bay) below the village of Assonet; length, about 5 miles; tidal in lower course. Taunton and Fall River sheets.

Mill Brook.—Franklin County; rises 1½ miles southwest of North Heath; flows southwesterly 4½ miles into Deerfield River (tributary to the Connecticut) at Charlemont. Hawley sheet.

Mill Brook.—Franklin County; rises southeast of Alexander Hill in the town of Northfield; flows eastward and northeastward about 2 miles, northwestward 3 miles, southwestward 2 miles, then again northwestward 1½ miles to its junction with Connecticut River at Northfield; fall, 1,000 feet, of which 500 feet occurs in a little more than 2 miles as the stream encircles the base of Hemlock Mountain. Warwick sheet.

MILL BROOK.—Franklin County; rises southeast of Frizzell Hill, in the town of Leyden; flows southeastward 3 miles, then southwesterly 5 miles to its junction with Green River (tributary through Deerfield River to the Connecticut) north of Greenfield; principal tributary, McCard Brook. Greenfield sheet.

MILL BROOK.—Franklin County; town of Monroe. *See* Dunbar Brook.

MILL BROOK.—Hampden County; town of Brimfield. *See* Quinebaug River.

MILL BROOK.—Hampshire County; rises in the northern part of the town of Plainfield; flows somewhat east of south 6 miles into Westfield River (tributary to the Connecticut). Hawley and Chesterfield sheets.

MILL BROOK.—Hampshire County; town of Goshen; the stream flowing from the lower reservoir in Goshen and forming the head of West Branch of Mill River (tributary to the Connecticut). Chesterfield sheet.

MILL BROOK.—Worcester County; rises (as Sucker Brook) in the town of New Braintree, north of Tuft Hill; flows southwestward 4 miles into a small pond in North Brookfield, thence northwestward 1½ miles (as Meadow Brook), thence southward through Wickaboag Pond to Quaboag River (tributary through Chicopee River to the Connecticut); distance along stream from head of Sucker Brook to Quaboag River, 10 miles. Barre and Brookfield sheets.

MILL BROOK.—Worcester County; rises 1 mile northwest of Summit Station; flows southeastward about a mile, thence southward through the city of Worcester to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); principal tributary, stream from North Pond; passes through several small ponds. Worcester sheet.

MILL BROOK.—Worcester County; town of Rutland; rises in Moulton Pond north of Rutland Center; flows southwestward 1 mile, then northwestward 2 miles into Long Meadow Brook (tributary through Ware River to Chicopee River and thus to the Connecticut). Worcester sheet.

MILL BROOK.—Worcester County; town of Webster; rises in Lake Chaugunagungamaug; flows northwestward into French River (tributary to Quinebaug River and thus through Shetucket and Thames rivers to Long Island Sound) near North Village; about a mile long. Webster sheet.

MILL CREEK.—Barnstable County; rises in Mill Pond at Sandwich; flows northward and eastward through the tidal marsh east of Sandwich and discharges into Cape Cod Bay. Barnstable sheet.

MILL CREEK.—Worcester County; a northwestward flowing stream discharging into Millers River (tributary to Connecticut River) at Athol; drains several ponds southeast of Athol, including the reservoir southwest of Ward Hill. Winchendon sheet.

MILLER BROOK.—Hampden County; town of Agawam; a stream less than a mile long flowing northward into Westfield River (tributary to the Connecticut). Springfield sheet.

MILLERS NECK BROOK.—Plymouth County; a stream about 2 miles long flowing southward into Black Brook at the northern end of the swamp through which that stream passes on its way to Great Quittacas Pond (natural outlet, Mattapoisett River to Buzzards Bay). Middleboro sheet.

MILLERS RIVER.—Worcester and Franklin counties; formed in the town of Ashburnham by the union of Bear Meadow and Bluefield brooks. Bluefield Brook, which drains the larger area and is therefore considered the continuation of the river, rises in the southwestern part of the town of New Ipswich, Hillsborough County, N. H., in a small pond on the south slope of Barrett Mountain, and flows southwestward 3½ miles to its junction with Bear Meadow Brook; from this point the general course of the Millers is southwesterly and westerly to Millers Falls, where it turns sharply and flows northward to its junction with the Connecticut; length, about 45 miles; drainage area, 394 square miles, of which 313 square miles

is in Massachusetts and 81 square miles in New Hampshire; principal tributaries from the north, Priest Brook, Tully River, Orcutt, Moss, and Keyup brooks; from the south, Otter River, Beaver Brook, Mill Creek, and Whetstone, Osgood, and Wickett brooks. The basin contains many ponds, the largest being Lake Monomonac; precipitation throughout the basin ranges from 45 inches in the upper to 40 inches in the lower part; water powers fairly well developed, especially between Athol and Millers Falls. Gaging stations at Wendell and Erving. Fitchburg, Winchendon, and Warwick sheets. *See also* pages 82–88 of this report.

Millham Brook.—Middlesex County; rises in Williams Pond just west of Marlboro, at altitude about 420 feet above sea level; flows generally westward 2 miles into Assabet River (tributary through Concord River to the Merrimack). Marlboro sheet.

Mill Pond.—Barnstable County; 1¼ miles southeast of Yarmouth village; inflowing stream considered the head of Bass River; outlet, Bass River (through Follins Pond) into Nantucket Sound; about one-half mile long. Yarmouth sheet.

Mill Pond.—Barnstable County; town of Bourne; north of Monument Beach; connected through Back River with Phinneys Harbor, Buzzards Bay. Falmouth sheet.

Mill Pond.—Barnstable County; town of Chatham; outlet, Mitchell River to Stage Harbor and Nantucket Sound. Chatham sheet.

Mill Pond.—Barnstable County; town of Sandwich; outlet, Mill Creek to Cape Cod Bay. Barnstable sheet.

Mill Pond.—Bristol County; an expansion of Acushnet River (tributary to New Bedford Harbor) about a mile north of Acushnet. New Bedford sheet.

Mill Pond.—Middlesex County; on Beaver Brook (outlet, through Forge Pond to Stony Brook and thus to the Merrimack) near Littleton station. Groton and Lowell sheets.

Mill Pond.—Plymouth County; town of Plymouth; on Eel River (tributary to Plymouth Harbor) about 1½ miles east of Great South Pond. Plymouth sheet.

Mill Ponds.—Barnstable County; a group of ponds south of West Brewster; outlet, Herring River into Cape Cod Bay. The largest of the ponds is about a mile long and one-half mile wide. Yarmouth sheet.

Mill River.—Bristol County; formed by a number of streams which drain parts of the towns of Sharon and Foxboro in Norfolk County, and Easton and Mansfield in Bristol County; Canoe River, the stream which drains the larger area and is therefore considered the continuation of Mill River, rises in a swamp about a mile south of Massapoag Pond in Norfolk County and flows in a very irregular but in general southeasterly course into Winneconnet Pond; from Winneconnet Pond Mill River flows eastward to the southwestern end of the Great Cedar Swamp, then southward to its junction with Taunton River (tributary to Narragansett Bay) at the city of Taunton; length to head of Canoe River, about 20 miles; principal tributary, Mulberry Meadow Brook, which flows into Winneconnet Pond. Called Pecuanticiot River in upper part of its course. Dedham and Taunton sheets.

Mill River, East Branch.—Franklin and Hampshire counties; rises in the southwestern part of the town of Conway; flows southward to Williamsburg, where it unites with the West Branch to form Mill River (tributary to the Connecticut); length, 7 miles; principal tributary, Bradford Branch. Chesterfield and Northampton sheets.

Mill River.—Essex County; rises in a swamp one-half mile east of South Georgetown, at altitude 80 feet above sea level; flows southeastward 1½ miles, then generally northeastward about 8 miles into Parker River (tributary to Plum Island River and thus to the Atlantic Ocean); swampy throughout most of its course; principal tributaries, Great Swamp, Bachelder, and Pasture brooks. Called Mill Creek near its mouth. Salem and Newburyport sheets.

MILL RIVER.—Essex County; rises one-half mile north of Gloucester; flows somewhat southwestward 1 mile and forms a tidewater channel which flows northward about 1½ miles, joining Squam River at its mouth. Gloucester sheet.

MILL RIVER.—Franklin and Hampshire counties; rises 1½ miles northeast of Conway; flows southeastward 3 miles, then southward to its junction with the Connecticut; length, 15 miles; principal tributaries, Bloody, Roaring, West, and Running Gutter brooks. Greenfield and Northampton sheets.

MILL RIVER.—Hampden County; formed by the junction of North and South branches, both of which flow into Water Shop Pond; the North Branch, considered the continuation of the river, rises in Ninemile Pond in the northern part of the town of Wilbraham; flows southwestward 3½ miles, northwestward 3 miles, then to the west and southwest 3 miles to the head of the northern arm of the pond; from the pond the river flows southwestward 1½ miles into Connecticut River. Palmer and Springfield sheets.

MILL RIVER.—Hampshire County; formed at Williamsburg by the union of its east and west branches. The West Branch, considered the continuation of the main stream, rises in the town of Goshen and flows southeastward; below the mouth of the East Branch the river continues to flow southeasterly to its junction with the Connecticut in the town of Northampton; length to head of West Branch, about 18 miles; principal tributaries below East Branch, Wright River, and Unquomonk, Beaver, and Roberts brooks.

The low-water flow is sustained by two reservoirs about 9 miles from the village of Leeds; the upper reservoir is the smaller, flows 64 acres, and is fed partly by springs and one or two little brooks but mainly by spring rains and melting snows. The lower reservoir flows 133 acres, it receives no stream except the one coming from the upper reservoir, but fills regularly. Bed of stream composed of coarse granite and gneiss; stream improved. *See* Water Power of the United States, Tenth Census, vol. 16, 1885, pp. 274 and 275, for description of physical features of the basin and an account of the failure of the Williamsburg reservoir in 1874. Chesterfield and Northampton sheets.

MILL RIVER.—Hampshire and Franklin counties; formed near East Leverett by the junction of Roaring and Pond brooks. Roaring Brook, which drains the larger area and is therefore considered the continuation of Mill River, rises 1 mile north of Shutesbury and flows southwesterly to its point of junction with Pond Brook; below this point Mill River flows southwestward to North Amherst, southward to the pond west of Agricultural College, thence in general westerly, though with a large northward curve, into Connecticut River at North Hadley; length to head of Roaring Brook, 13 miles. Belchertown and Northampton sheets.

MILL RIVER.—Middlesex and Worcester counties; rises about 2 miles south of Woodville in the town of Hopkinton; flows in general somewhat east of south to its junction with Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay) at Woonsocket, R. I.; length, 16 miles; principal tributaries, Muddy, Round Meadow, and Hop brooks; passes through several ponds. Blackstone sheet.

MILL RIVER.—Norfolk County; rises in Great Pond 1 mile southwest of South Weymouth; flows northward and northeastward into Whitman Pond (outlet Weymouth Back River); considered continuation of Weymouth Back River. Abington sheet.

MILL RIVER, SOUTH BRANCH.—Hampshire County; rises on the west slope of Wilbraham Mountain; flows southwestward 3 miles, west of north 2½ miles, southwestward 1 mile, and again northwestward 1 mile to the head of the southern arm of Water Shop Pond (outlet Mill River to Connecticut River). Palmer and Springfield sheets.

MINE BROOK.—Hillsboro County, N. H., Middlesex County, Mass.; rises in Hollis, N. H.; flows southward 2 miles into Nissitisset River (tributary through Nashua River to the Merrimack) near North Village. Groton sheet.

MINE BROOK.—Norfolk County; rises 1 mile east of Cedar Hill, at altitude 250 feet above sea level; flows southwestward about 3 miles, then southeastward 3 miles to its junction with Neponset River, in the town of Walpole. Franklin sheet.

MINE BROOK.—Norfolk County; rises about 4 miles southwest of Franklin, at altitude 280 feet above sea level; flows northward into Charles River (tributary to Boston Bay) at West Medway; length, about 9 miles; fall, about 100 feet; passes through Beaver Pond and a long narrow pond west of Franklin. Franklin sheet.

MINE BROOK.—Worcester County; town of Webster; a stream 1½ miles long flowing southwestward into Sucker Brook (tributary to Lake Chaubunagungamaug, which discharges through Mill Brook to French River and thus through Quinebaug River to Shetucket and Thames rivers and Long Island Sound). Webster sheet.

MINECHOAG POND.—Hampden County; a small pond 1 mile northeast of Ludlow and three-fourths mile north of Chicopee River (tributary to the Connecticut). Palmer sheet.

MIREY BROOK.—Franklin County, Mass., Cheshire County, N. H.; formed on the north slope of Mount Grace, in the town of Warwick by the union of Mountain and Kidder brooks; Mountain Brook, which is considered the continuation of the main stream, rises on the east slope of Mount Grace and flows in general northwestward to its junction with Kidder Brook; below that junction Mirey Brook flows northwestward to Winchester, where it enters Ashuelot River (tributary to Connecticut River); length to extreme head of Mountain Brook, about 8 miles, of which about 3 miles is in Massachusetts. Warwick and Keene sheets.

MISCOE BROOK.—Worcester County; town of Grafton; the head of West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

MITCHELL BROOK.—Berkshire County; town of New Ashford; a stream 1½ miles long, flowing westward into the East Branch of Green River (tributary through Green River to Hoosic River and thus to the Hudson) 1½ miles northeast of the village of New Ashford. Greylock sheet.

MITCHELL RIVER.—Barnstable County; the channel connecting Mill Pond with Stage Harbor in the town of Chatham. Chatham sheet.

MOCCASIN BROOK.—Worcester County; rises in the town of Phillipston, one-eighth mile west of the south end of Phillipston Pond; flows northwestward one-half mile, then southwesterly 5 miles into the East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Winchendon and Barre sheets.

MOHAWK BROOK.—Berkshire County; town of Stockbridge; rises in Mohawk Lake a mile northwest of Glendale; flows southward into Housatonic River; about 1¼ miles long. Pittsfield sheet.

MOHAWK BROOK.—Franklin County; town of Sunderland; rises 3 miles south of Mount Toby; flows southwestward into Dug Brook (tributary to the Connecticut); 3 miles long. Northampton sheet.

MOHAWK LAKE.—Berkshire County; western part of the town of Stockbridge; a mile northwest of Glendale; outlet, Mohawk Brook to Housatonic River. Pittsfield sheet.

MONOMONAC LAKE.—Cheshire County, N. H., and Worcester County, Mass.; several small inflowing streams; outlet, a stream flowing southwestward into Whitney Pond on Millers River (tributary to the Connecticut). The lake is very irregular in outline and contains a number of small islands; altitude, about 1,030 feet above

sea level; fall between outlet of lake and Whitney Pond, about 70 feet; approximate area, 800 acres. Fitchburg and Winchendon sheets.

Monoosnoc Brook.—Worcester County; heads in a large reservoir about 3 miles northwest of the town of Leominster; flows northeastward 2½ miles, southeastward 2 miles to Leominster, then very irregularly eastward about 2 miles into North Branch of Nashua River (tributary through Nashua River to the Merrimack). In Leominster it passes through several ponds. Fitchburg and Groton sheets.

Monponset Pond.—Plymouth County; town of Halifax; a large pond almost bisected by a narrow ridge which is crossed by a road leading from Halifax to Bryantville. The eastern half of the pond is fed by a stream from Stetson Pond; the western half receives a stream that rises near Bryantville. The discharge of the pond is westward through Great Cedar Swamp to Stump Pond, thence through a short stream to Robbin Pond, and thus to Satucket River (tributary to Matfield River and thus through Taunton River to Narragansett Bay). Abington sheet.

Monument River.—Plymouth and Barnstable counties; rises in Little Herring Pond in the southeastern part of the town of Plymouth; flows southward through Great Herring Pond to Bournedale, then southwestward into Buzzards Bay; length to head of Little Herring Pond, about 8 miles; fall below Little Herring Pond about 50 feet. Plymouth and Falmouth sheets.

Moore Brook.—Worcester County; rises at North Brookfield; flows southeastward 2½ miles into Dunn Brook (tributary through Quaboag River to Chicopee River and thus to the Connecticut). Barre and Brookfield sheets.

Moore Lake.—Franklin County; town of Warwick; 2 miles south of the village of Warwick; inlet, Grace Brook, the head of Moss Brook; outlet, Moss Brook to Millers River (tributary to the Connecticut). Warwick sheet.

Moose Brook.—Hampshire County; a stream about 2 miles long flowing northward into Manhan River (tributary to the Connecticut) in the southern part of the town of Southampton. Springfield sheet.

Moose Brook.—Worcester County; rises in the town of Barre 3 miles northwest of the village of Barre; flows somewhat west of south 8½ miles into Ware River (tributary through Chicopee River to the Connecticut) at Old Furnace in the town of Hardwick. Barre sheet.

Moose Horn Brook.—Franklin County; town of New Salem; rises on the south slope of Harris Hill; flows southeastward 3½ miles into Hop Brook Pond (outlet Hop Brook to Middle Branch or head of Swift River, which is tributary through Ware River to Chicopee River and thus to the Connecticut). Warwick and Belchertown sheets.

Moose Horn Pond.—Worcester County; town of Hubbardston; outlet, a stream one-half mile long flowing northwestward into the West Branch of Ware River (tributary through Ware River to Chicopee River and thus to the Connecticut); three-fourths mile long; one-fourth mile wide. Worcester sheet.

Moose Meadow Brook.—Hampden County; rises on the west slope of Bungy Hill, in the town of Montgomery; flows somewhat east of south 7 miles to its junction with Westfield River (tributary to the Connecticut) 2 miles northwest of the city of Westfield. Granville sheet.

Moose Pond.—Worcester County; town of Spencer; northeast of Spencer Center; outlet, a stream 2 miles long flowing southwesterly into Sevenmile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut). Worcester sheet.

Morey Hole.—Plymouth County; town of Plymouth; 1½ miles southwest of Indian Hill. Plymouth sheet.

Morses Pond.—Norfolk and Middlesex counties; inlets, streams from None Such and Jennings Ponds; outlet, a stream one-eighth mile long flowing eastward into Waban Lake (tributary to Charles River). Framingham sheet.

MORTON POND.—Hampshire County; town of Ware; 2 miles northwest of Brimstone Hill; outlet, Beaver Brook to Ware River (tributary through Chicopee River to the Connecticut). Belchertown sheet.

MOSQUITO BROOK.—Essex County. *See* Fish Brook.

MOSQUITO POND.—Plymouth County; town of Wareham; one-half mile west of Tihonet Pond; outlet, a stream a mile long flowing southeastward into Wankinco River (tributary through Wareham River to Buzzards Bay) at the village of Tihonet. Plymouth sheet.

MOSS BROOK.—Franklin County; rises on the south slope of Mount Grace; flows southeastward (as Grace Brook) to Lake Moore, thence in general somewhat west of south to its junction with Millers River (tributary to the Connecticut) at Wendell Depot; gaging station at Wendell Depot, 1909–10; length to head of Grace Brook, 7 miles; principal tributary, Wilson Brook. Warwick sheet.

MOTHER BROOK.—Norfolk and Suffolk counties; flows from Charles River through East Dedham and Hyde Park and joins Neponset River about 1½ miles below the Great Meadows. Mother Brook is legally entitled to one-third of the flow of Charles River, which at the point where the brook begins drains an area of 198.6 square miles. Mother Brook may therefore be considered as having, in addition to its own drainage area of 1.87 square miles, an area of 66.2 square miles which drains to the Charles. Dedham and Boston sheets. *See also* Report of the Massachusetts State Board of Health upon the sanitary condition of the Neponset Meadows in the towns of Canton, Sharon, Norwood, Dedham, Milton, and Hyde Park.

MOULTON POND.—Worcester County; town of Rutland; north of Rutland Center; outlet, Mill Brook to Ware River (tributary through Chicopee River to the Connecticut). Worcester sheet.

MOUNTAIN BROOK.—Hampden County; town of Brimfield; a stream about 1½ miles long flowing southward into Mill Brook (tributary through Quinebaug River to Shetucket and Thames rivers and thus to Long Island Sound). Brookfield sheet.

MOUNTAIN BROOK.—Franklin County. *See* Mirey Brook.

MOUNT EPHRAIM RESERVOIRS.—Middlesex County; formerly part of the water storage system of the metropolitan district of Boston and vicinity; natural outlet through a small stream to Mystic lakes and thus to Mystic River, which discharges into Boston Bay. Boston sheet.

MUD CREEK.—Essex County; a tidewater channel west of Plum Island River (separated from the Atlantic Ocean by Plum Island). Newburyport and Salem sheets.

MUDDY BROOK.—Hampshire and Hampden counties; towns of Granby and Chicopee; a stretch of the middle course of Stony Brook (Hampshire County). *See* Stony Brook. Springfield sheet.

MUDDY BROOK.—Worcester County; rises 1¼ miles west of Hopedale; flows southeastward 4 miles, thence very irregularly eastward into Mill River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

MUDDY BROOK.—Worcester County; a stream originally about 4 miles long, shown on the Marlboro and Worcester sheets of United States Geological Survey as rising near Boylston Center and flowing west and north into Nashua River (tributary to Merrimack River); partially flooded out by Wachusett reservoir.

MUDDY BROOK.—Worcester and Hampshire counties; rises 1 mile west of Ridge Hill; flows southwesterly 11 miles into Ware River (tributary through Chicopee River to the Connecticut) at the city of Ware; passes through Muddy and several smaller ponds. Barre sheet.

MUDDY CREEK.—Barnstable County; a tidal creek extending from Pleasant Bay southwestward into the town of Chatham. Yarmouth and Chatham sheets.

MUDDY POND.—Barnstable County; town of Barnstable; three-fourths mile west of Cotuit Ponds; connected by a short stream flowing eastward into the stream that discharges southeastward into Great Bay at the head of Osterville Harbor, Nantucket Sound. Barnstable sheet.

MUDDY POND.—Berkshire County; town of Washington; inlet, the head of Housatonic River; outlet, Housatonic River; small. Becket sheet.

MUDDY POND.—Essex County; a very small pond in Wenham Swamp just northwest of Wenham and about 3 miles northeast of Danvers; Lawrence sheet.

MUDDY POND.—Plymouth County; a small pond one-half mile north of Neponset Pond and 1 mile west of Silver Lake. Abington sheet.

MUDDY POND.—Plymouth County; town of Kingston; 1½ miles southwest of Monks Hill. Plymouth sheet.

MUDDY POND.—Plymouth County; a small pond in the town of Wareham; outlet, a stream one-eighth mile long flowing northward into Red Brook (tributary through Buttermilk Bay to Buzzards Bay). Plymouth sheet.

MUDDY POND.—Suffolk County; near northwestern boundary of Hyde Park; outlet, a stream about a mile long flowing southeastward into Stony Brook. Boston sheet.

MUDDY POND.—Worcester County; 1½ miles west of Gilbertville; inlet and outlet, Muddy Brook (tributary through Ware River to Chicopee River and thus to the Connecticut); 1 mile long and one-fourth mile wide. Barre sheet.

MUDDY POND.—Worcester County; 2 miles northeast of the village of Oakham; outlet, a stream 2 miles long flowing northwestward through several small ponds into Ware River (tributary through Chicopee River to the Connecticut) at the village of Cold Brook. Barre sheet.

MUDDY POND.—Worcester County; 2 miles east of South Ashburnham; altitude, 1,030 feet above sea level; no large inlets; outlet, a stream about a mile long flowing southwestward into Whitman River (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack). Fitchburg sheet.

MUDDY POND.—Worcester County; a small pond lying about three-fourths mile west of West Waushaccum Pond and discharging by a stream one-fourth mile long into a pond on Stillwater River (tributary to Wachusett reservoir). Worcester sheet.

MUDDY RUN.—Essex County; rises east of Turkey Hill and just west of Ipswich, at altitude about 30 feet above sea level; flows generally northward about 2½ miles to its junction with Bull Brook tributary through Rowley River, a tidewater channel into Plum Island River (separated from the Atlantic Ocean by Plum Island) three-fourths mile east of Rowley. Salem sheet.

MUD POND.—Berkshire County, town of Pittsfield; one-half mile southeast of the village of Barkerville; outlet, a stream a mile long, flowing northward into a pond on Housatonic Branch (tributary through west branch of Housatonic River to the Housatonic) at lower Barkerville. Pittsfield sheet.

MUD POND.—Middlesex County; 1½ miles north of Natick; inlet, two small streams in the marsh north of the pond, one flowing from Pickerel Pond; outlet, a stream about a mile long flowing south and east through the marsh west of Jennings Pond (tributary through Morses Pond to Waban Lake and thus to Charles River). Framingham sheet.

MUD POND.—Worcester County; town of Ashburnham; a small pond about half a mile northeast of Nashua Reservoir; outlet, a stream 2 miles long flowing northwestward into Millers River (tributary to Connecticut River) near North Ashburnham station. Fitchburg sheet.

MULBERRY MEADOW BROOK.—Bristol County; rises on the east slope of Rattlesnake Hill in the town of Stoughton, Norfolk County; flows southwestward to Leach Pond, then in general southeasterly to Winneconnet Pond; outlet through Mill River to Taunton River and thus to Narragansett Bay; length, 9 miles. Dedham and Taunton sheets.

MULPUS BROOK.—Worcester and Middlesex counties; rises in Worcester County south of Baberry Hill, at altitude about 610 feet above sea level; flows southeastward 19 miles and discharges into Nashua River (tributary to the Merrimack) near Woodside; total fall about 400 feet; marshy through much of its course. Groton sheet.

MUMFORD RIVER.—Worcester County; rises in a pond at West Sutton; flows southeastward to Manchaug Pond, thence eastward and southeastward to Bad Luck Pond at East Douglas, northeastward and northward to Whitins Pond, thence southeastward to its junction with Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay) near Uxbridge; length, about 15 miles. Webster and Blackstone sheets.

MUNN BROOK.—Hampden County; formed in the town of Granville by the union of Dickinson and Tillison brooks; Dickinson Brook, the continuation of Munn Brook, rises on the west slope of Bad Luck Mountain and takes a circuitous course, passing south, southeast, and northeast to the north base of Sodom Mountain, where it receives Tillison Brook; from this point Munn Brook flows southeastward 1 mile, then northeastward 3½ miles to Westfield, where it enters Westfield Little River (tributary through Westfield River to the Connecticut). Granville sheet.

MUSQUAPOG POND.—Worcester County, east of Rice Hill; outlet, a stream about 3 miles long flowing southeastward and then northeastward into Quinapoxet River (tributary to Wachusett Reservoir), about one-fourth mile below Quinapoxet Pond; altitude, about 1,030 feet above sea level; fall of outflowing stream, 300 feet. Worcester sheet.

MUSQUASHIAT POND.—Plymouth County; one mile southeast of Scituate Neck; drained westward through the tidal marsh by which Bound Brook is discharged to Cohasset Harbor; a narrow sand-bar separates this pond from the ocean. Abington street.

MYRICKS POND.—Barnstable County; half a mile northeast of village of Brewster; outlet, a stream flowing southwest and then north into Cape Cod Bay. Wellfleet sheet.

MYSTIC LAKES.—Middlesex County; a series of three lakes lying between Arlington and Winchester; inlet to upper lake, Aberjona River; outlet from lower lake, Mystic River to Boston Bay; combined length of three lakes, 1½ miles; maximum width, one-half mile; formerly part of water supply system of Boston and vicinity. Boston sheet.

MYSTIC POND.—Essex County; one-half mile west of Methuen and about 1 mile northwest of Lawrence; inlet, a stream 1½ miles long and marshy, flowing in from the west; outlet, a very small stream flowing northward into Spickett River (tributary to the Merrimack); altitude, about 110 feet above sea level; very small. Lawrence sheet.

MYSTIC RIVER.—Middlesex and Essex counties; rises just west of Reading at altitude 100 feet above sea level; takes a general southward course for 9 miles to Arlington, passing through Richardson's and Burbank ponds and Mystic lakes, then flows southeastward about 7 miles to its junction with Charles River and into Boston Bay; called on the map Aberjona River between Richardson Pond and Mystic lakes; fall from source to Mystic lakes, 80 feet; principal tributaries, Alewife Brook and Malden River. Lawrence and Boston sheets.

NABNASSET POND.—Middlesex County; 1 mile west of West Chelmsford; inlet from Flushing Pond; outlet, a stream one-half mile long flowing southeastward to Gilsons Brook (tributary through Stony Brook to the Merrimack); about 1 mile long. Lowell sheet.

NAGOG BROOK.—Middlesex County; rises in Nagog Pond, 1 mile west of North Acton station, at altitude 220 feet above sea level; flows southeastward 1 mile into Nashoba Brook (tributary through Fort Pond Brook to Assabet River and thus through Concord River to the Merrimack). Lowell sheet.

NAGOG POND.—Middlesex County; about 1 mile south of Nashoba Hill and 1 mile west of North Acton station; outlet, Nagog Brook (tributary through Fort Pond Brook to Assabet River and thus through Concord River to the Merrimack); altitude, 220 feet above sea level; length, 1 mile; maximum width, one-half mile. Lowell sheet.

NAMASKET RIVER.—Bristol and Plymouth counties; rises in the town of Freetown; the headwater stream being known as Fall Brook; flows northward and eastward to Long Pond; then northward through long and Assawompsett ponds to Middleboro whence its general course is northwesterly to Taunton River (tributary to Narragansett Bay). The basin includes, in addition to Assawompsett and Long ponds in Lakeville, Elders Pond and a number of smaller ponds in Middleboro. Length of the river from its junction with the Taunton to the head of Fall Brook, about 20 miles. Assawompsett and Elders ponds are used by the city of Taunton as a source of water for municipal supply. Middlesex and New Bedford sheets.

NAMSKAKET CREEK.—Barnstable County; a channel in the marsh southwest of Namskaket. Wellfleet sheet.

NARROW CREEK.—Nantucket County; Nantucket Island; one of a series of tidal inlets at the western end of the island. Muskeget sheet.

NASHAQUITSA POND.—Dukes County; Martha Vineyard; Gayhead; the southern arm of Menemsha Pond; separated from the ocean by Stonewall Beach; the pond is much smaller than Menamsha Pond and very irregular in outline. Gayhead sheet.

NASHOBA BROOK.—Middlesex County; rises about one-fourth mile northwest of East Littleton station, at altitude 200 feet above sea level; flows southeastward 4 miles, then takes a general southward course 4½ miles to its junction with Fort Pond Brook (tributary through Assabet River to Concord River and thus to the Merrimack); principal tributaries, Nonset and Nagog brooks. Lowell and Framingham sheets.

NASHUA RIVER.—Massachusetts and New Hampshire; formed 2 miles north of Clinton by the junction of the north and south branches (*see* Nashua River, North Branch, and Nashua River, South Branch), takes a general northeasterly course to its junction with Merrimack River at Nashua, N. H. For 3 or 4 miles above the mouth of the Nashua the fall of the stream is rapid, its bed is rocky, and its banks are high; above that point the fall is less for a distance of 8 or 10 miles, but the banks are still high enough to confine the river except in high freshets. From Groton to the mouth of the North Branch the stream is very sluggish, its bed and banks are sandy and gravelly, and considerable areas of muddy land bordering the streams are at times inundated.

South Branch of Nashua River has been measured at Clinton by the engineers of the Metropolitan Water and Sewerage Board since July, 1896. Authorities: Marlboro, Groton, Milford, and Manchester sheets. Maps of Metropolitan Water District. U. S. Geological Survey water-supply papers. *See also* pages 283–284 of this report.

NASHUA RIVER, NORTH BRANCH OF.—Formed in the town of Fitchburg by the union of Whitman and Nookagee rivers. Whitman River, which drains the larger area, is considered the head of the stream and rises on the west slope of Meeting House Hill at altitude about 1,180 feet above sea level; flows southeastward about 8 miles, then northeastward about 1 mile to the point at which it receives Nookagee River. From this junction the North Branch of Nashua flows north-

eastward 2 miles, then southeastward 14 miles to its junction with South Branch of Nashua River (tributary to the Merrimack), in Lancaster. Principal tributary of Whitman River above Fitchburg, the stream that collects the waters of Meeting House, Wachusett, and Grass ponds. Fitchburg, Groton, and Marlboro sheets.

NASHUA RIVER, SOUTH BRANCH.—Outlet of Wachusett reservoir at Clinton; originally formed by junction of Quinapoxet and Stillwater Rivers at Oakdale, Worcester County; from Clinton takes a general northeasterly course for 2 miles to its junction with the North Branch of Nashua River at Lancaster. The tributaries above the reservoir drain the eastern and southern slopes of Wachusett Mountain; drainage area above Clinton, 118.9 square miles. Worcester and Marlboro sheets.

NASKETUCKET RIVER.—Bristol County; a stream about 3 miles long, flowing southeastward into Little Bay at the head of Nasketucket Bay, a branch of Buzzards Bay; tidal below Nasketucket. New Bedford sheet.

NATTY POND.—Worcester County; northern part of the town of Hubbardston; outlet Natty Pond Brook to Canesto Brook (tributary through Burnshirt River to Ware River and thus through Chicopee River to the Connecticut); one-half mile long, one-fourth mile wide. Barre sheet.

NATTY POND BROOK.—Worcester County; rises in the northern part of the town of Hubbardston; flows southeastward 3½ miles passing through Natty Pond, then southwestward 1½ miles into Canesto Brook (tributary through Burnshirt River to Ware River and thus through Chicopee River to the Connecticut). Barre sheet.

NAUKEAG PONDS, UPPER AND LOWER.—Worcester County; town of Ashburnham; the upper pond is about a mile long and nearly half a mile wide, and discharges by a stream 1 mile long flowing northwestward into Lower Naukeag Pond, the outlet of which is a stream flowing north of west into Millers River (tributary to Connecticut River). The fall between the upper and lower ponds is about 70 feet. Between the lower pond and the river the fall is about 15 feet. Fitchburg sheet.

NEAL POND.—Essex County; a very small pond 1½ miles west of Merrimac; altitude, about 80 feet above sea level; outlet, a stream flowing southeastward 4 miles into Merrimack River, 2 miles east of Haverhill. Haverhill sheet.

NELSON ISLAND CREEK.—Essex County; a tidewater channel west of Plum Island River (separated from the Atlantic Ocean by Plum Island). Salem sheet.

NEPONSET RESERVOIR.—Norfolk County; town of Foxborough; outlet, Neponset River to Dorchester Bay; altitude, about 280 feet. Franklin and Dedham sheets.

NEPONSET RIVER.—Norfolk and Suffolk counties; rises in Neponset Reservoir in the town of Foxborough; flows in a general northeasterly course and discharges into Dorchester Bay; length, about 18 miles; total fall, about 280 feet, of which 220 feet occurs in the 10 miles below the reservoir and above the Great Meadows; principal tributaries, Canton River or East Branch and Mother Brook, which flows from Charles River through East Dedham and Hyde Park and joins the main river about 1½ miles below the Great Meadows; drainage area above Mother Brook, 96.28 square miles. As Mother Brook is legally entitled to one-third of the flow of Charles River, which at the point where the brook begins drains an area of 198.6 square miles, it may be considered as having an additional drainage area of 66.2 square miles, or 68.07 square miles, including area tributary directly to Mother Brook; the drainage area of the Neponset at its mouth including one-third of the drainage area of Charles River above Mother Brook is 180.34 square miles. Franklin, Dedham, and Boston sheets. *See also* Report of the Massachusetts State Board of Health upon the sanitary condition of the Neponset Meadows in the towns of Canton, Sharon, Norwood, Dedham, Milton, and Hyde Park, 1897.

NEPONSET RIVER, EAST BRANCH. *See* Canton River.

Neseponset Pond.—Worcester County; town of Dana; an expansion of the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut), extending northward from North Dana nearly 2 miles. Belchertown sheet.

New Bedford Reservoir.—Bristol County; a pond near the head of Acushnet River (formerly used by the city of New Bedford for municipal supply); principal inflowing stream, Acushnet River; outlet, Acushnet River to New Bedford Harbor. Middleboro and New Bedford sheets.

New Boston River.—Barnstable County; town of Dennis; a marshy channel extending southward from Dennis into the marsh northeast of Yarmouth Port, where it connects with Chase Garden Creek. Yarmouth sheet.

Newcomb Pond.—Barnstable County; a small pond 2¼ miles north of the village of Wellfleet. Wellfleet sheet.

Newfield Pond.—Middlesex County; just west of North Chelmsford; connected by a canal with the pond on Stony Brook (tributary to the Merrimack) at West Chelmsford; about one-half mile long. Lowell sheet.

Newton Pond.—Worcester County; on Quinsigamond River (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay) northwest of Harlow Hill. Marlboro sheet.

Nichol Brook.—Essex County; rises in a swamp about a mile northwest of Danvers at altitude 80 feet above sea level; flows northwestward 3 miles into Ipswich River; marshy throughout part of its course. Salem sheet.

Ninemile Pond.—Hampshire County; town of Wilbraham; southwest of North Wilbraham; outlet, the North Branch or head of Mill River (tributary to the Connecticut). Palmer sheet.

Nipmuck Pond.—Worcester County; one mile southwest of the village of Mendon; outlet, Meadow Brook to West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

Nipnuck Pond; Worcester County; 3 miles southeast of Oxford; outlet through Sucker Brook to Lake Chaubunagungamaug (outlet Millbrook to French River and thus through Quinebaug River to Shetucket River, Thames River, and Long Island Sound); very small. Webster sheet.

Nippenicket Pond.—Plymouth County; on the southern edge of Great Cedar Swamp; inlet, a stream in the swamp passing through Nunkets Pond; outlet northward to Town River (tributary through Matfield River to Taunton River and thus to Narragansett Bay). Taunton sheet.

Nissitisset River.—Hillsboro County, N. H., Middlesex County, Mass.; rises in Potanota Pond in the town of Brookline, N. H.; flows southeastward 7 miles, then north of east 1 mile into Nashua River (tributary to the Merrimack). The principal stream flowing into Potanota Pond is Mitchell Brook; altitude of Potanota Pond, about 260 feet above sea level; fall of Nissitisset River between the pond and Nashua River, about 100 feet; principal tributaries of Nissitisset River in Massachusetts, Wold, Gulf, Sacker, and Mine brooks. Milford and Groton sheets.

Nichol Brook.—Essex County; rises on the east slope of Pond Hill at altitude 100 feet above sea level; flows generally southward through a small pond into Merrimack River, one-half mile east of Merrimacport; fall, about 80 feet. Newburyport sheet.

Nobadeer Pond.—Nantucket County; Nantucket Island; south shore; separated from the ocean by a narrow beach. Nantucket sheet.

No Bottom Pond.—Plymouth County; town of Pembroke; one-fourth mile north of Furnace Pond, into which it discharges by a southward-flowing stream. Abington sheet.

NOD BROOK.—Middlesex County; a stream about 1 mile long flowing westward into Nashua River (tributary to the Merrimack) near Paper Mill village in the town of Groton. Groton sheet.

NONACOICUS BROOK.—Middlesex County; rises in a marsh north of Rocky Hill, flows 2 miles southwestward through Long Pond to Sandy Pond, thence in general westward into Nashua River (tributary to the Merrimack); passes through Plowshop Pond south of Ayer; principal tributary, Bowers Brook, which flows into head of the pond just south of Ayer. Groton sheet.

NONSET BROOK.—Middlesex County; rises one-half mile south of Westford between Blakes Hill and Burns Hill at altitude 300 feet above sea level; takes a general southward course for 2½ miles to its junction with Nashoba Brook (tributary through Fort Pond Brook to Assabet River and thus through Concord River to the Merrimack) about one-half mile east of Nashoba Hill. Lowell and Framingham sheets.

NONE SUCH POND.—Middlesex County; about 3 miles northeast of Natick; inlet, a small stream rising near Weston and flowing south and southwest; outlet, a stream 2 miles long flowing southward into Morses Pond (tributary through Waban Lake to Charles River). Framingham sheet.

NOOKAGEE RIVER.—Worcester County; rises on the south slope of Little Watatic Mountain in a small pond at altitude 1,130 feet above sea level; takes a general southeasterly course to West Fitchburg, where it joins Whitman River to form North Branch of Nashua River (tributary through Nashua River to the Merrimack); length, about 9 miles; passes through several small lakes. Called Phillips Brook between Ashburnham and a small lake a mile northwest of Blackburn village. Fitchburg sheet.

NORTHAM CREEK.—Berkshire County; rises on Bald Mountain in the town of Clarksburg; flows southward 2 miles into Hoosic River (tributary to the Hudson) 2 miles west of North Adams. Greylock sheet.

NORTH BRANCH OF NASHUA RIVER. *See* Nashua River, North Branch of.

NORTH BROOK.—Hampshire County; town of Westhampton; head of North Branch of Manhan River (tributary through Manhan River to the Connecticut). Chesterfield sheet.

NORTH BROOK.—Worcester County; rises about 1 mile southeast of Clinton, at altitude 380 feet above sea level; flows generally southward 2 miles, northeastward 1 mile, southeastward 3½ miles, and again northeastward about one-half mile into Assabet River (tributary through Concord River to the Merrimack). One-half mile from its source it passes through Clamshell Pond, and near South Berlin through a pond about one-fourth mile long. Marlboro sheet.

NORTH MEADOW POND.—Hampden County; north of North Blandford; on Pebble Brook (tributary to Springfield reservoir on Westfield Little River, p. 424); shown on the map as 1 mile long and one-fourth mile wide, but has been drained. Granville sheet.

NORTH POND.—Berkshire County; town of Florida; outlet, a stream three-fourths mile long flowing northeastward into Tower Brook (tributary to Cold River and thus through Deerfield River to the Connecticut). Greylock sheet.

NORTH POND.—Franklin County; town of Orange; southwest of Walnut Hill; natural outlet, Middle Branch of Swift River, the head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut); one-half mile long and one-half mile wide. Diverted to Millers River basin for water supply of Orange. Warwick sheet.

NORTH POND.—Middlesex and Worcester counties; inlet and outlet, Mill River, which flows through it to Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay); more than 2 miles long; about one-fourth wide. Blackstone sheet.

North Pond.—Nantucket County; Tuckernuck Island; northwest shore; tidal. Muskeget sheet.

North Pond.—Worcester County; north of the city of Worcester; outlet, a stream one-eighth mile long, flowing eastward into Mill Brook (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay) north of Northville; nearly a mile long and one-half mile wide. Worcester sheet.

North River, East Branch.—Franklin County. *See* North River.

North River.—Essex County; formed at Peabody by the junction of Goldthwait and Proctor brooks; flows generally eastward 2 miles through Peabody and Salem, to the North River arm of Beverly Harbor. Salem sheet.

North River.—Plymouth County; rises about 1 mile north of North Abington; flows southeastward 8 miles, then in general northeastward 12 miles, then southeastward again 4 miles to Massachusetts Bay; called French Stream at its head and Indian Head River through the greater part of its middle course; principal tributaries, Drinkwater River, Indian Head Brook, Herring Brook, and First, Second, and Third Herring brooks. The basin contains many marshy tracts and a number of ponds. Abington and Duxbury sheets.

North River, West Branch.—Franklin County; rises in the town of Whittington, Windham County, Vt., flows southward 3 miles, then southeastward 9 miles to its junction with East Branch (tributary through North River to the Deerfield and thus to the Connecticut) near Lyonsville in the town of Coleraine. Wilmington, Hawley, and Greenfield sheets.

North River.—Windham County, Vt., Franklin County, Mass.; formed near Lyonsville in the town of Colrain by the union of its east and west branches. East Branch, which drains the larger area and is therefore considered the continuation of the main stream, rises 1½ miles south of East Wilmington, Vt., and takes a general southeasterly course to a point near Colrain, Mass., where it turns southwest, west, and south, to receive the West Branch; below this junction North River winds south and southwestward to the point at which it enters Deerfield River (tributary to the Connecticut) 1½ miles north of Shelburne Falls; length to head of East Branch, about 20 miles. Wilmington, Hawley, and Greenfield sheets.

Norton Reservoir.—Bristol County; town of Norton; inlet, Rumford River; outlet, Rumford River to Threemile River (tributary through Taunton River to Narragansett Bay); a pond about 2 miles long and nearly a mile wide. Taunton sheet.

Norwich Pond.—Hampshire County; town of Huntington; outlet, Pond Brook to Westfield River (tributary to the Connecticut); one-half mile wide; nearly three-fourths mile long. Chesterfield sheet.

Notch Brook.—Berkshire County; rises on Mount Greylock; flows north of east 3½ miles through the Notch to North Adams, where it enters Hoosic River (tributary to the Hudson). Greylock sheet.

Nunkets Pond.—On line between Plymouth and Bristol counties; in the Great Cedar Swamp; outlet, a stream one-half mile long, flowing southeastward through the swamp into Nippenicket Pond, which discharges northward to Town River (tributary through Matfield River to Taunton River and thus to Narragansett Bay). Taunton sheet.

Nuttings Pond.—Middlesex County; 1½ miles south of Billerica, at altitude 200 feet above sea level; inlet, two very small streams, unnamed on the map; outlet, a stream about 2 miles long flowing into Concord River (tributary to the Merrimack); length, one-half mile; maximum width, one-fourth mile. Lowell sheet.

OAK HILL POND.—Worcester County; a small pond lying one-half mile southeast of Spectacle Pond in the town of Lancaster; discharges by a stream one-fourth mile long into the brook by which Spectacle Pond is connected with North Branch of Nashua River (tributary through Nashua River to the Merrimack). Groton sheet.

OLDHAM POND.—Plymouth County; town of Pembroke; length, about 1 mile; width, one-half mile. Abington sheet.

OLD HARBOR CREEK.—Barnstable Creek; town of Sandwich; a tidal channel in the marsh east of Sandwich; connects with Mill Creek. Barnstable sheet.

OLD SWAMP RIVER.—Norfolk County; rises in the town of Rockland; flows west of north 4 miles into Whitman Pond (outlet, Weymouth Back River). Abington sheet.

ONOTA BROOK.—Berkshire County; the outlet of Lake Onota in Pittsfield; tributary through the west branch of Housatonic River to Housatonic River; 1½ miles long. Pittsfield sheet.

ONOTA LAKE.—Berkshire County; town of Pittsfield; principal inlets, Daniels and Lulu brooks; outlet, Onota Brook to West Branch of Housatonic River (tributary to the Housatonic). The main lake is more than a mile long and about one-half mile wide at its widest part. Pittsfield sheet.

ORCUTT BROOK.—Franklin County; rises just north of the New Hampshire-Massachusetts boundary line, in the southeastern part of the town of Winchester, N. H.; flows southeastward 4 miles, then west of south 6 miles to its junction with Millers River (tributary to the Connecticut) at West Orange. Called Gales Brook above the pond east of Hockanum Hill. Warwick sheet.

OSGOOD BROOK.—Franklin County; rises in a pond about 3 miles southeast of Millers Falls; flows northwestward 2 miles into Millers River (tributary to the Connecticut) 1½ miles east of Millers Falls. Warwick sheet.

OSGOOD BROOK. Franklin County; town of Wendell; rises one-half mile north of the village of Wendell; flows northward 1½ miles, then northeastward 2 miles into Millers River (tributary to the Connecticut) near Wendell depot. Warwick sheet.

OTIS RESERVOIR.—Berkshire and Hampden counties; towns of Otis and Tolland; principal inlet, stream from Benton Lake; outlet, a stream a mile long flowing westward into the Farmington River (tributary to the Connecticut); a large reservoir occupying a natural site; altitude, 1,422 feet. The reservoir is very irregular in shape, is about 3 miles in maximum length and nearly one-half mile in average width. Its operation greatly affects the low-water flow of Farmington River. Sandisfield sheet.

OTTER BROOK.—Franklin County; town of Gill; rises on the north slope of Barnard Hill; flows southeastward 1 mile, then southward 1 mile into Connecticut River. Warwick sheet.

OTTER POND BROOK.—Franklin County; town of Gill; rises 2 miles north of Mason Hill; takes a circuitous but in general easterly course to its junction with Dry Brook (tributary to Connecticut River); length, 2½ miles. Greenfield sheet.

OTTER RIVER.—Worcester County; rises in the town of Hubbardston; flows northeastward about 3 miles, then very irregularly northwestward to its junction with Millers River (tributary to the Connecticut); length, about 14 miles; principal tributaries, Foster, Pond, Kneeland, Bailey, and Trout brooks. The basin contains many ponds, the largest being Crystal Lake, in Gardner. Fitchburg and Winchendon sheets.

OVERLOOK RESERVOIR.—Worcester County; about 1 mile northwest of the city of Fitchburg.

OYSTER CREEK.—Barnstable County; a tidal channel connecting Oyster Pond with Stage Harbor and Nantucket Sound in the town of Chatham. Chatham sheet.

OYSTER POND.—Barnstable County; 1½ miles southwest of the city of Falmouth. Falmouth sheet.

OYSTER POND.—Barnstable County; town of Chatham; outlet, Oyster Creek to Stage Harbor and Nantucket Sound; tidal. Chatham sheet.

OYSTER POND.—Dukes County; Marthas Vineyard; one of a series of ponds on the south shore of the island, separated from the ocean by a continuous barrier beach; about halfway between Tisbury Great Pond and Edgartown Great Pond. Marthas Vineyard sheet.

PACKARD POND.—Franklin County; town of Orange; northwest of Fryville; outlet, a stream one-fourth mile long flowing southwestward into West Branch of Tully River (tributary through Tully River to Millers River and thus to the Connecticut). The pond is double, the parts being connected by a short eastward flowing stream. Water is diverted from the East Branch of Tully River into the eastern arm of Packard Pond by a canal about one-fourth mile long. Winchendon sheet.

PAGES BROOK.—Middlesex County; rises in Tophet Swamp, one-half mile north of Carlisle, at altitude 180 feet above sea level; flows southeastward 1½ miles, then northeastward 1½ miles into Concord River (tributary to the Merrimack) 1 mile west of South Billerica; marshy. Lowell sheet.

PAINES CREEK.—Essex County; a tidewater channel into Greenes Creek (tributary to Plum Island River and thus to the Atlantic Ocean). Salem sheet.

PALMER RIVER. *See* Warren River.

PAMANSET RIVER.—Bristol County; rises in Sassaquin Pond; flows southwesterly through Acushnet Cedar Swamp and along the west border of Great Cedar Swamp, northwest of New Bedford, thence in general west of south to Slocums River, through which it passes into Buzzards Bay; length, about 15 miles. New Bedford and Fall River sheets.

PAMET RIVER.—Barnstable County; town of Truro; a channel in the marsh extending westward from a point near the Pamet River life-saving station on the ocean to Cape Cod Bay, almost cutting off the north end of Cape Cod Peninsula. Wellfleet sheet.

PANTRY BROOK.—Middlesex County; rises about 2 miles south of Maynard, at altitude about 180 feet above sea level; takes a very irregular course eastward to its junction with Sudbury River (tributary through Concord River to the Merrimack); length, 4½ miles; marshy throughout much of its course. Framingham sheet.

PAQUA POND.—Dukes County; Marthas Vineyard; one of a series of ponds on the south shore of the island, separated from the ocean by a continuous barrier beach; one-eighth mile east of Oyster Pond and a mile west of Edgartown Great Pond. Marthas Vineyard sheet.

PARISH POND.—Berkshire County; town of Otis; 1 mile northwest of East Otis; outlet, a stream 2 miles long flowing southwestward into Farmington River (tributary to the Connecticut). Sandisfield sheet.

PARKER RIVER.—Essex County; rises 1 mile northwest of West Boxford and 2½ miles east of North Andover, at altitude 160 feet above sea level; flows southeastward 1 mile through several small ponds, northeastward 7 miles, and then takes a very irregular course eastward for 10 miles to Plum Island River, a tidewater channel, and thus to the Atlantic Ocean; passes through Rock and Pentucket ponds near Georgetown and through several small ponds unnamed on the map; swampy throughout its course. On the Salem sheet the stretch of Parker River flowing from Georgetown northward through the swamp is called Penn Brook; principal tributaries, Beaver Brook, Mill River (or Creek), and Little River. Lawrence, Haverhill, Newburyport, and Salem sheets.

PARKERS RIVER.—Barnstable County; town of Yarmouth; rises in Plashes Pond; flows southward 2½ miles into Nantucket Sound; tidal in its lower course. Yarmouth sheet.

PARK POND.—Middlesex County; 3 miles northwest of Lowell, one-fourth mile south of Tyngs Pond; surrounded by a marsh which is drained southward through Scarlet Brook to the Merrimack. Lowell sheet.

PASTURE BROOK.—Essex County; rises on the east slope of Huy Slow Hill, just west of Rowley, at altitude 60 feet above sea level; flows eastward 1 mile, then northwestward 2 miles into Mill Creek (tributary through Parker River to Plum Island River and thus to the Atlantic Ocean) near Glen Mills. Salem sheet.

PASTURE POND.—Barnstable County; one of a group of ponds northwest of Provincetown. Provincetown sheet.

PATCH MEADOW BROOK.—Middlesex County; rises about 2½ miles west of Billerica, and 1 mile east of Tophet Swamp, at altitude 180 feet above sea level; flows southwestward 1¼ miles into River Meadow Brook (tributary through Concord River to the Merrimack). Lowell sheet.

PATTAQUATTIC POND.—Hampden County; town of Palmer; a small pond one-eighth mile east of Ware River (tributary through Chicopee River to the Connecticut); connected with Forest Pond. Palmer sheet.

PEA BROOK.—Franklin County; town of Conway; rises a mile southeast of Pine Hill; flows northwestward 1½ miles, then northeastward one-half mile into Bear River (tributary through Deerfield River to the Connecticut). Greenfield sheet.

PEARL HILL BROOK (NORTH).—Worcester and Middlesex counties; rises on the northeast slope of Pearl Hill in Worcester County, at altitude 610 feet above sea level; flows northeastward into Middlesex County and discharges into Squannacook River (tributary through Nashua River to the Merrimack) just below Ashby Swamp; length, about 5 miles; fall, 270 feet. Fitchburg sheet.

PEARL HILL BROOK (SOUTH).—Worcester County; rises about 1 mile east of Pearl Hill, about 480 feet above sea level; flows southward 2½ miles, then southwestward one-half mile into Baker Brook (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack). Fitchburg sheet.

PEBBLE BROOK.—Head of Westfield Little River (tributary through Westfield River to the Connecticut). Granville sheet.

PECKS BROOK.—Berkshire County; rises on the south slope of Mount Greylock; flows southeasterly to Adams, where it enters Hoosic River (tributary to the Hudson); 3½ miles long. Greylock sheet.

PECOWSIC BROOK.—Hampden County; rises on the north slope of McCarthy Hill in the town of Long Meadow; flows westerly in a very circuitous course into Connecticut River a mile south of the mouth of Mill River in Springfield; length, 6 miles. Springfield sheet.

PECUANTICIOT RIVER. *See* Mill River, Bristol County.

PELHAM BROOK.—Franklin County; rises just south of the Massachusetts-Vermont boundary, in the town of Rowe; flows southward 2½ miles, then southwestward 4½ miles into Deerfield River (tributary to the Connecticut) at Zoar. Hawley sheet.

PENN BROOK. *See* Parker River.

PENNY BROOK.—Essex County; rises in Tomlin Swamp; flows northwestward one-half mile into Walden Pond, then westward one-half mile into Hawkes Brook (tributary to Saugus River, which discharges into Boston Bay) at North Saugus. Boston Bay sheet. Map in report of Massachusetts State Board of Health, page 75.

PENNY BROOK.—Hampshire County; town of Ware; a stream less than a mile long flowing southwestward into Beaver Brook (tributary through Ware River to Chicopee River and thus to the Connecticut). Palmer sheet.

PENTUCKET POND.—Essex County; just north of Georgetown; inlet, Parker River from Rock Pond; outlet, Penn Brook and Parker River (tributary through Plum Island River to the Atlantic Ocean); altitude, 80 feet above sea level. Salem sheet.

PERCHOG BROOK.—Cheshire County, N. H., Franklin County, Mass.; rises in the town of Winchester, N. H.; flows southwestward into Connecticut River near East Northfield, Mass.; length, 5 miles, of which only 1 mile is in Massachusetts. Warwick sheet.

PERRY POND.—Worcester County; 1 mile northwest of East Brookfield and one-fourth mile west of Furnace Pond; two inflowing streams, one from a small pond at East Brookfield and the other, Dunn Brook, which flows through it and is tributary to Quaboag River (tributary through Chicopee River to Connecticut). Brookfield sheet.

PETER POND.—Worcester County; town of Dudley; outlet, a stream less than a mile long flowing southwestward into Merino Pond (outlet to French River and thus through Quinebaug, Shetucket, and Thames rivers to Long Island Sound). Webster sheet.

PETERS POND.—Barnstable County; 1 mile northwest of the village of Wakeby and one-half mile north of Wakeby Pond; natural outlet through Wakeby Pond, and Mashpee River to Nantucket Sound. Barnstable sheet.

PETERS POND.—Essex County; in the town of Methuen, 4 miles west of Lawrence; altitude, about 60 feet above sea level; outlet, a small stream about a mile long flowing southeastward into Bartletts Brook (tributary to Merrimack River); length, about three-fourths mile; maximum width, about one-fourth mile.

PEW BROOK.—Worcester County; town of Gardner; rises on the east slope of Ray Hill; flows southwestward 2 miles, then northwestward 1 mile into Foster Brook (tributary to Otter River and thus through Millers River to the Connecticut); receives the overflow from South Gardner Reservoir. Fitchburg sheet.

PHELPS BROOK.—Berkshire County; rises in the southeastern part of the town of Hancock; flows southeastward into a pond on Housatonic Branch (tributary through west branch of Housatonic River to the Housatonic) at Lower Barkerville; length, 3 miles. Pittsfield sheet.

PHILLIPS BROOK.—Plymouth County; rises near West Duxbury; flows southeastward 1 mile, then northeastward 2 miles to its junction with South River (tributary to Massachusetts Bay); passes through two ponds. Abington and Duxbury sheets.

PHILLIPS BROOK.—Worcester County; a brook about a mile long connecting two of the chain of small lakes on Nookagee River between Ashburnham and Blackburn village; marshy. Fitchburg sheet.

PHILLIPS CREEK.—Berkshire County; town of North Adams; a stream 2 miles long flowing north of west into Hoosic River (tributary to the Hudson) a mile south of North Adams. Greylock sheet.

PHILLIPSTON POND.—Worcester County; 1 mile southeast of the village of Phillipston; outlet, a stream flowing eastward into the swamp on Burnshirt River (tributary through Ware River to Chicopee River and thus to the Connecticut) east of East Phillipston. Winchendon sheet.

PHILO BROOK.—Hampden County; town of Agawam; rises in the western part of the township; flows southeastward 2½ miles, then passes into Connecticut and takes a southerly course to its junction with Muddy Brook, through which it is tributary to Stony Brook and thus to Connecticut River. Springfield and Hartford sheets.

PICKEREL POND.—Hampden County; a small pond north of Ludlow and about 1 mile north of Chicopee River (tributary to the Connecticut). Palmer sheet.

PICKEREL POND.—Middlesex County; in the marsh 2 miles north of Natick; drains through Mud Pond to Jennings and Morses Ponds and thus through Waban Lake to Charles River. Framingham sheet.

PICKEREL POND.—Plymouth County; town of Wareham; 2 miles north of Onset. Plymouth sheet.

PIERCE BROOK.—Worcester County; town of West Brookfield; a stream about a mile long flowing southeastward into Ellis River (tributary through Quaboag River to Chicopee River and thus to the Connecticut). Barre sheet.

PIERPOINT MEADOW POND.—Worcester County; one mile southeast of South Charlton; outlet, a stream one-eighth mile long flowing northward into the stream connecting Charlton Reservoir with Little River (tributary through French River to Quinebaug River and thus through Shetucket and Thames rivers to Long Island Sound). Webster sheet.

PILGRIM LAKE.—Barnstable County; 2 miles east of Provincetown; north of Pilgrim Beach; 1½ miles long. Provincetown sheet.

PINE BROOK.—Plymouth County; town of Kingston; rises one-half mile south of West Duxbury; flows southward into Jones River (tributary to Kingston Bay); passes through several ponds; length, 4 miles. Abington sheet.

PINE CREEK.—Essex County; a tidewater channel on Plum Island, about 1½ miles long and flowing southward into Plum Island River opposite Great Neck. Salem sheet.

PINE HILL BROOK.—Worcester County; town of Barre; rises on the south slops of Farrow Hill; flows southward 3 miles into Ware River (tributary through Chicopee River to the Connecticut). Barre sheet.

PINE POINT RIVER.—Plymouth County; a tidal channel in Duxbury Marsh. Duxbury sheet.

PINES RIVER.—Essex and Middlesex counties; rises above Swamp Pond, just north of Malden, at altitude 100 feet above sea level; takes a very irregular course eastward for about 6 miles, through Malden, and joins Saugus River at its entrance to Boston Bay. Boston and Boston Bay sheets.

PINE SWAMP BROOK.—Bristol County; town of Taunton; rises in Prospect Hill Pond north of Taunton; flows eastward about 3 miles to Kings Pond, then west of south 3 miles into Taunton River (tributary to Narragansett Bay) about a mile east of the city of Taunton, principal tributary, stream from Gushee Pond. Taunton sheet.

PLAINFIELD POND.—Franklin County; north of West Mountain; outlet, King Brook to Chickley River (tributary through Deerfield River to the Connecticut). Hawley sheet.

PLANTAIN POND.—Berkshire County; southeastern part of the town of Mount Washington; between Mount Plantain and Race Mountain; outlet, a stream 1½ miles long flowing southeasterly into Schenob Brook (tributary to the Housatonic). Sheffield sheet.

PLASHES POND.—Barnstable County; town of Yarmouth; two small ponds connected by a short stream; outlet, Parkers River to Nantucket Sound. Yarmouth sheet.

PLEASANT BROOK.—Worcester County; town of Barre; rises 2 miles northeast of the village of Barre; flows southward 1½ miles, then southwestward 1½ miles to Prince River (tributary through Ware River to Chicopee River and thus to the Connecticut). Barre sheet.

PLEASANTDALE POND.—Worcester County; town of Sutton; an expansion of Cold Spring Brook (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

PLEASANT POND.—Essex County; in Wenham Swamp, 3½ miles northeast of Danvers; inlet, a very small stream coming in from the south; outlet, a stream 1 mile long flowing somewhat northwestward into Ipswich River; length, about one-half mile; maximum width, less than one-fourth mile. Salem sheet.

PLOWSHOP POND.—Middlesex County; in the southern part of Ayer; inlets, Bowers Brook and stream from Sandy Pond. Groton sheet.

Plug Pond.—Essex County; a small pond just east of Haverhill; outlet, a small stream about one-half mile long flowing southward into Merrimack River at Haverhill; altitude, about 140 feet above sea level. Haverhill sheet.

Plum Island River.—Essex County; a tidal channel separated from the ocean by Plum Island and receiving the drainage from the area between the mouth of the Merrimack and the mouth of the Ipswich. The principal stream in this area extending beyond the limits of the swamp is Parker River. The other streams in the swamp west of Plum Island River are creeks and rivers in name only, as most of them are merely tidewater channels. Newburyport and Salem sheets.

Plunkett Reservoir.—Berkshire County; town of Hinsdale; two inflowing streams; outlet, a stream three-fourths mile long flowing northeastward into Housatonic River. Becket sheet.

Pocksha Pond.—Plymouth County; town of Lakeville; the eastern arm of Assawompsett Pond. *See* Assawompsett Pond. Middleboro sheet.

Pomps Pond.—Essex County; a very small pond about a mile south of Andover; outlet, a short stream flowing into Shawsheen River (tributary to the Merrimack); altitude, about 60 feet above sea level. Lawrence sheet.

Pond Brook.—Franklin County; town of Leverett; rises 1 mile south of North Leverett; flows southward to East Leverett, where it units with Roaring Brook to form Mill River (tributary to the Connecticut); 3½ miles long. Belchertown sheet.

Pond Brook.—Franklin County; town of Montague; rises on the west slope of Dry Hill; flows north of west 1½ miles to Great Pond, thence southwestward 1½ miles into Saw Mill River (tributary to the Connecticut). Greenfield sheet.

Pond Brook.—Hampden County; rises in a pond 2 miles north of West Granville; flows southward 5 miles and unites with Hubbard Brook to form the East Branch of Farmington River (tributary through Farmington River to the Connecticut). Granville sheet.

Pond Brook.—Hampden County; rises in Hampton Pond; flows southward 2 miles, passing through Horse Pond, then southwesterly 3 miles into Powder Mill Brook (tributary through Westfield River to the Connecticut). Springfield sheet.

Pond Brook.—Hampden County; rises on the north slope of Barnes Mountain, in the town of Tolland; flows northeasterly 3½ miles, southeastward 1 mile, then again northeastward one-half mile to its junction with Pebble Brook and thus to Springfield reservoir on Westfield Little River. *See* Westfield Little River. Principal tributary, stream from Blair Pond. Granville sheet.

Pond Brook.—Hampshire County; rises in Norwich Pond in the town of Huntington; flows southwestward 3 miles into Westfield River (tributary to the Connecticut). Chesterfield sheet.

Pond Brook.—Worcester County; city of Gardner; a stream about 2 miles long draining a series of small ponds south of Crystal Lake and flowing southwestward into Otter River (tributary through Millers River to the Connecticut). Fitchburg and Winchendon sheets.

Ponkapoag Brook.—Norfolk County; rises in Ponkapoag Pond in the eastern part of the town of Canton; flows westward one-half mile, then northwestward 2 miles into Neponset River in the Great Meadows. Dedham sheet.

Ponkapoag Pond.—Norfolk County; Canton and Randolph townships; outlet, Ponkapoag Brook to Neponset River. Dedham sheet.

Pontoosuc Lake.—Berkshire County; towns of Lanesboro and Pittsfield; principal inlet, west branch of Housatonic River, which flows through it to its junction with Housatonic River. The lake is 1½ miles long, about 1 mile wide, and contains several small islands. Berlin, Greylock, Pittsfield, and Becket sheets.

Poor Meadow Brook. *See* Satucket River.

Popple Hill Brook.—Franklin County; rises on the east slope of Popple Hill; flows northward 1½ miles into Roaring Brook (tributary through Mill River to the Connecticut). Northampton sheet.

Populatic Pond.—Norfolk County; 1 mile southeast of Medway; drained by Charles River, which flows across its northern end. Franklin sheet.

Poquoy Trout Brook.—Plymouth County, town of Middleboro; rises about 1 mile southwest of the city of Middleboro; flows northwestward 4 miles into Taunton River (tributary to Narragansett Bay). Middleboro sheet.

Porter River.—Essex County; a tidewater channel just east of Danvers; length southeastward about 1 mile to Danvers River and thus to the Atlantic. The head of Porter River is called Frost Fish Brook. Salem sheet. *See* Frost Fish Brook.

Potash Brook.—Hampden County; rises near Blandford; flows south of east 5½ miles to Salmon Falls, where it enters Westfield River (tributary to the Connecticut); principal tributary, stream from Hazzard Pond. Granville sheet.

Potash Brook.—Hampshire County; town of Williamsburg; head of Wright River (tributary through Mill River to the Connecticut). Northampton sheet.

Potash Brook.—Middlesex County; rises southeast of Marsh Hill, 1½ miles north of Centralville, at altitude 160 feet above sea level; flows southeastward about one-half mile into Richardson Brook (tributary through Trout Brook to the Merrimack). Lowell sheet.

Potash Brook.—Worcester County; rises 1½ miles southwest of Barre Falls; flow southwestward into Ware River (tributary through Chicopee River to the Connecticut); 1 mile long. Barre sheet.

Pottapaug Pond.—Worcester County; east of Pottapaug Hill; a large pond on the East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut) in the town of Dana. Barre sheet.

Poucha Pond.—Dukes County; Chappaquiddick Island; east of Marthas Vineyard; separated from Nantucket Sound on the east by a narrow barrier beach; connected by a channel extending from its northeastern end to Cape Poge Bay east of Edgartown Harbor. Marthas Vineyard sheet.

Powder Mill Brook.—Hampden County; rises 1 mile southeast of the village of Montgomery; flows southeastward 7½ miles to its junction with Westfield River (tributary to the Connecticut), 1 mile below the mouth of Little River. Granville and Springfield sheets.

Powow River.—Rockingham County, N. H., and Essex County, Mass.; rises in the town of Sandown in Rockingham County, N. H., at altitude 240 feet above sea level; flows generally south of east 7 miles through Angle and Country ponds, then northward 1 mile into a swamp through which its passes in a general eastward direction, and takes a very irregular course southeastward 4½ miles, crossing into Essex County, Mass., and around the south slope of Ring Hill. Just east of Ring Hill it again flows northward into New Hampshire, where it makes an abrupt turn and takes a southeastward course for 3½ miles into Massachusetts, passing through Lake Garner and discharging into the Merrimack at Salisbury Point; total length, about 22 miles. Haverhill and Newburyport sheets.

Prankers Pond.—Essex County; about 2 miles northeast of Melrose; inlet, Saugus River; outlet, Saugus River to Boston Bay; length, about three-fourths mile; maximum width, about one-fourth mile. Boston sheet.

Pratt Brook.—Worcester County; town of Barre; formed near Barre Plains by the junction of Burrow and Bell brooks. Burrow Brook, considered the continuation of Pratt Brook, rises in the town of Oakham and flows northwesterly to the junction, below which Pratt Brook flows westward into Ware River (tributary through Chicopee River to the Connecticut); length to head of Burrow Brook, 4½ miles; below mouth of Bell Brook, 1 mile. Barre sheet.

PRATT POND.—Worcester County; town of Upton; near head of Center Brook, which flows through it to West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

PRIEST BROOK.—Cheshire County, N. H., and Worcester County, Mass.; rises south of Monadnock Mountain; flows southerly to its junction with Millers River 4 miles southwest of Winchendon, Mass.; called Scott Brook above a small pond through which it flows below Fitzwilliam, N. H.; length to head of Scott Brook, 14 miles. Monadnock and Winchendon sheets.

PRINCE RIVER.—Worcester County; town of Barre; rises 2 miles north of west from the village of Williamsville; flows southward into Ware River (tributary through Chicopee River to the Connecticut) at Barre Plains; length, 8 miles; principal tributaries, Pleasant, Galloway, and Smith brooks; passes through many small ponds. Barre sheet.

PROCTOR BROOK.—Essex County; rises 3 miles southwest of Danvers, at altitude 80 feet above sea level; flows generally southeastward 4 miles to its junction with Goldthwait Brook to form North River (which joins the Atlantic Ocean at Beverly Harbor); marshy throughout much of its course. Salem sheet.

PROSPECT HILL POND.—Bristol County; town of Taunton; north of the city of Taunton; outlet, Pine Swamp Brook to Taunton River (tributary to Narragansett Bay). Taunton sheet.

PROSPECT LAKE.—Berkshire County; northwestern part of the town of Egremont; two inflowing streams; outlet, a stream a mile long flowing north and east into Green River (tributary to the Housatonic). Sheffield sheet.

PUDDING BROOK.—Plymouth County; formed by two branches that unite near East Pembroke; the longer branch rises in the town of Marshfield at an altitude of about 70 feet above sea level and flows in general southwestward about 3 miles; below the junction the brook flows northwestward and westward 2½ miles into Herring Brook (tributary to North River). Duxbury and Abington sheets.

PUFFER POND.—Middlesex County; 1½ miles south of Maynard; altitude, 200 feet above sea level; outlet, a stream flowing northwestward 1½ miles into Assabet River (tributary through Concord River to the Merrimack). Framingham sheet.

PUMPKIN BROOK.—Middlesex County; a stream about 2 miles long rising 2 miles south of Townsend Harbor and flowing eastward into Squannacook River (tributary through Nashua River to the Merrimack). Groton sheet.

PUNCH BROOK.—Franklin County; town of Greenfield; a stream 2 miles long flowing southeastward into Green River (tributary through Deerfield River to the Connecticut) a mile south of the mouth of Glen Brook. Greenfield sheet.

PUNCH BROOK.—Worcester County; a stream about 1½ miles long, rising in the hills northwest of Fitchburg and flowing southeastward into North Branch of Nashua River (tributary through Nashua River to the Merrimack). Fitchburg sheet.

PURGATORY BROOK.—Norfolk County; rises in the marsh east of West Dedham; flows southeastward into Neponset River in the Great Meadows; length, 4 miles. Dedham sheet.

PURGATORY BROOK.—Worcester County; town of Sutton; rises a mile west of Purgatory Chasm; flows southeastward and eastward to Burts Pond; thence southward to Whitins Pond on Mumford River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); length, 3 miles. Blackstone sheet.

PURGEE BROOK.—Hampshire County; town of Pelham; rises a mile north of the village of Pelham; flows southeastward 3 miles into the West Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Belchertown sheet.

PUTNAM BROOK.—Middlesex County; rises in a swamp on the south slope of Robbins Hill, 1 mile northeast of South Chelmsford at altitude 180 feet above sea level; flows northeastward 1½ miles into River Meadow Brook (tributary through Concord River to the Merrimack) near Chelmsford Center. Lowell sheet.

PYE BROOK.—Essex County; rises in Spoffords Pond, 2 miles southeast of West Boxford, at altitude 120 feet above sea level; flows generally southeastward 5 miles to its junction with Howlett Brook to form Miles Brook (tributary to Ipswich River); passes through Four Mile Pond; marshy. Lawrence and Salem sheets.

QUABOAG POND.—Worcester County; town of Brookfield; several inflowing streams, the most important being East Brookfield River, considered the continuation of Quaboag River; outlet, Quaboag River to Chicopee River and thus to the Connecticut; the pond is triangular in shape and measures about a mile along each side. Brookfield sheet.

QUABOAG RIVER.—Worcester and Hampden counties; the most southerly of the three principal tributaries of the Chicopee; flows from Quaboag Pond in the town of Brookfield; the pond receives as its principal feeder East Brookfield River, whose principal tributary, Sevenmile River, may be considered the head of the Quaboag. Sevenmile River rises in the town of Rutland a mile southeast of the southern end of Long Pond and flows southwesterly to Spencer, where it enters the pond from which East Brookfield River flows southwesterly into Quaboag Pond; from Quaboag Pond, Quaboag River flows northwestward to West Brookfield, where it receives the outlet of Wickaboag Pond, southwestward to Warren, westward to a point a mile west of West Warren, then southward to the western base of Fenton Mountain, from which point its general course is northwestward to Three Rivers where it joins Ware River to form Chicopee River (tributary to the Connecticut); length of the Quaboag below Quaboag Pond, 23 miles; total drainage area above Three Rivers, 210 square miles; principal tributary of East Brookfield River below Sevenmile River is Fivemile River, which flows through Brooks and Furnace ponds and drains parts of Oakham, New Braintree, Spencer and North Brookfield; the most important tributary of Sevenmile River is Turkey Brook; below Quaboag Pond, Quaboag River receives Coy Brook, the outlet of Wickaboag Pond, Ellis River, and Kings Brook from the north, Blodgett Mill, Chicopee, and Twelvemile brooks from the south. The area east and north of Brookfield contains many ponds. Gaging stations at West Warren, 1904–1907, and at West Brimfield, 1909–1915. Worcester, Webster, Barre, Brookfield, and Palmer sheets. *See also* pages 135–149 of this report.

QUACUMQUASIT POND; Worcester County; town of Brookfield; south of Quaboag Pond (tributary through Quaboag River to Chicopee River and thus to the Connecticut) with which it is connected by a northward flowing stream one-half mile long. The pond is about 1½ miles long and nearly half a mile in maximum width. Brookfield sheet.

QUAKER BROOK.—Bristol County; town of Berkley; rises on the northeastern slope of Brants Hill; flows southeastward into Forges Pond on Assonet River (tributary through Taunton River to Narragansett Bay); length, 2 miles. Taunton sheet.

QUAKERS RUN.—Barnstable County; a stream about a mile long flowing southeastward into Cotuit River 1½ miles west of Cotuit Port. Barnstable sheet.

QUANNAPOWITT LAKE.—Middlesex County; just north of Wakefield; inlet, head of Saugus River and another small stream coming in from the west; outlet, Saugus River, which discharges into Boston Bay; altitude 100 feet above sea level; length, about 1 mile; maximum width, about one-half mile. Lawrence sheet.

QUEEN BROOK.—Plymouth County; town of Pembroke; a stream less than half a mile long flowing westward into the north end of Furnace Pond. Abington sheet.

QUEEN SEWELL POND.—Barnstable County; town of Bourne; a small pond lying between Monument River and Buttermilk Bay; connected by a marsh with Little Buttermilk Bay. Plymouth sheet.

QUEQUECHAN RIVER.—Bristol County; city of Fall River; the stream connecting Watuppa ponds with Taunton River (tributary to Narragansett Bay). Fall River sheet.

QUINAPOXET POND.—Worcester County; principal inflowing stream, South Wachusett Brook; outlet, Quinapoxet River (tributary to Wachusett Reservoir); altitude about 750 feet above sea level; length, about three-fourths mile; maximum width, three-eighths mile. Worcester sheet.

QUINAPOXET RIVER.—Rises in Quinapoxet Pond in the northern part of Worcester County, in the town of Holden, at altitude about 750 feet above sea level; flows southeastward 3 miles, then northeast and east 3 miles, to Wachusett Reservoir at Oakdale; principal tributaries, South Wachusett Brook, the main feeder of Quinapoxet Pond, Asnebumskit Brook, and Trout Brook. Worcester sheet.

QUINEBAUG RIVER.—Hampden and Worcester Counties, Mass., Windham and New London Counties, Conn.; formed in the town of Brimfield, Hampden County, where Mill Brook, the headwater stream draining the largest area, receives a number of tributaries from the towns of Wales and Holland. Of these smaller tributaries Hollow Brook is superior by reason of drainage area and is therefore to be considered the head of the Quinebaug. Hollow Brook rises on the east slope of Mount Pisgah and flows northward about 4 miles to its junction with Charles Brook; from this point Mill Brook flows eastward and southeastward into the swamp southwest of East Brimfield where it receives a stream that carries the overflow from Mashapaug Pond, Hamilton Reservoir, and Holland Pond; from this point the stream flows northeastward to Fiskdale, thence southeasterly through the towns of Sturbridge, Southbridge, and Dudley, Mass., southerly through the eastern part of Windham County, Conn., to Wauregan, thence southwesterly to its junction with Shetucket River (tributary through Thames River to Long Island Sound) 3 miles above its mouth; length below mouth of Mill Brook, about 60 miles, in which distance the fall is about 600 feet; average fall below Southbridge, about 7 feet per mile. The large number of storage reservoirs and mill ponds holds back the water of storms and melting snows and modifies the violence of freshets. The water power report of the Tenth Census (p. 201) lists 39 ponds, of which 21 are in Massachusetts. The largest of these ponds (Lake Chaubunagungamaug) covers an area of 1,300 acres. The river is extensively used for power at many points in Connecticut and Massachusetts. Principal tributaries of the Quinebaug in Massachusetts below the mouth of Mill Brook include streams from Long and Cedar ponds, Hamant, Hobbs, Breakneck, Hatchet, Globe, Cady, Cohasse, Lebanon, and Tufts brooks, and French River, which joins the Quinebaug in Connecticut but drains a considerable area in Massachusetts. Brookfield, Webster, Putnam, Moosup, and Norwich sheets. *See also* Reports on the water power of the United States, Tenth Census (1880), vol. 16, pp. 200–212, 1885, in which the water powers of the Quinebaug and its tributaries are described.

QUINSIGAMOND LAKE.—Worcester County; an expansion of Quinsigamond River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); about 5½ miles long, one-eighth to one-fourth mile wide in the upper part and one about 1 mile wide in the lower part; altitude, 360 feet above sea level. Worcester, Marlboro, and Blackstone sheets.

QUINSIGAMOND RIVER.—Worcester County; rises about 1 mile southeast of Boylston Center in the town of Boylston; flows southwestward to Sewell Pond, thence southward through Newton Pond to the head of Lake Quinsigamond, from which it flows southeastward to Goddard Pond, thence southward to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay) at Fisherville; length, 14 miles; principal tributaries, Great and South Jordan brooks, which flow into Lake Quinsigamond. Worcester, Marlboro, and Blackstone sheets.

QUITTACAS PONDS.—*See* Great Quittacas and Little Quittacas ponds.

QUIVETT CREEK.—A channel in the marsh east of East Dennis. Yarmouth and Wellfleet sheets.

QUOSTINET RIVER.—Barnstable County; rises at the north end of John Pond; flows eastward through a marsh one-half mile, then in general west of south to Waquoit Bay, through which it is connected with Nantucket Sound; length, about 5 miles. Falmouth sheet.

RABBIT POND.—Plymouth County; town of Plymouth; a very small pond lying one-half mile west of the beach close to the south end of Fresh Pond. Plymouth sheet.

RAMSHORN BROOK.—Worcester County; rises 1 mile south of Ramshorn Pond; flows northeastward through the pond to West Millbury, thence northwestward to Stoneville, where it enters the pond on Kettle Brook (tributary to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay); length, 7 miles. Webster sheet.

RAMSHORN POND.—Worcester County; 1 mile south of West Millbury; outlet, Ramshorn Brook to Kettle Brook (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Webster sheet.

RAVEN BROOK.—Plymouth County; rises about 3 miles northeast of Middleboro; flows northward along the eastern edge of Great Cedar Swamp and discharges into Wenatuxet River (tributary through Taunton River to Narragansett Bay) near South Halifax; length, about 4 miles. Middleboro sheet.

RAWSON BROOK.—Berkshire County; rises on Chestnut Hill in the town of Monterey; flows southwesterly 2½ miles, northwesterly 3 miles to its junction with Konkapot River (tributary to the Housatonic). Sandisfield sheet.

RED BROOK.—Barnstable County, town of Mashpee; a stream about a mile long flowing southwestward into one of the eastern arms of Waquoit Bay. Falmouth sheet.

RED BROOK.—Hampshire County, town of Southampton; rises on the southwest slope of Little Mountain; flows southwesterly 1½ miles, thence southeasterly 1 mile into Manhan River (tributary to the Connecticut). Springfield sheet.

RED BROOK.—Plymouth and Barnstable counties; rises in White Island Pond; flows irregularly southward and discharges into Buttermilk Bay at the head of Cohasset Narrows, Buzzards Bay; length, about 4 miles. For 2 miles above Buttermilk Bay, Red Brook is on the boundary between the towns of Wareham and Plymouth. Plymouth sheet.

RED RIVER.—Barnstable County; a channel in the marsh southeast of South Harwich. Yarmouth sheet.

REED BROOK.—Berkshire County; a stream about a mile long, flowing westward into Tophet Brook (tributary through Hoosic River to the Hudson) in the town of Adams. Greylock sheet.

REED POND.—Nantucket County, Nantucket Island, northwest of the city of Nantucket; a very small pond less than one-eighth mile back from the beach. Nantucket sheet.

REEDY MEADOW BROOK.—Middlesex County; rises in a swamp about 2½ miles southeast of Pepperell; flows northward into Nashua River (tributary to the Merrimack). Groton sheet.

RESERVOIR MARSH POND.—Norfolk County; 1½ miles north of Wrentham; on Stop River (tributary to Charles River). Franklin sheet.

RESERVOIR POND.—Bristol County, town of North Attleboro; west of Attleboro Falls and Robinsonville; inflowing stream passes through a pond above North Attleboro; outlet to Tenmile River and thus to Narragansett Bay. Providence sheet.

RESERVOIR POND.—Norfolk County, town of Canton; principal inlet, a stream flowing through the marsh in the eastern part of the township; outlet, a stream one-half mile long flowing from the west end southward into the pond on Canton River at Canton. Dedham sheet.

RESERVOIRS NOS. 1 TO 5.—Worcester and Middlesex counties; storage reservoirs in the Sudbury Basin constructed by the city of Boston and the Metropolitan Water and Sewerage Board. *See* Sudbury River and Concord River. Marlboro and Framingham sheets.

REVERE BROOK.—Essex County; rises about 1 mile northwest of Lynn, at altitude 100 feet above sea level; flows southwestward one-half mile into Breeds Pond, and continues southeastward for 1 mile into Saugus River, which discharges into Boston Bay; principal tributary, stream draining Birch Pond. Boston and Boston Bay sheets.

RICE BROOK.—Franklin County; town of Charlemont; rises northeast of Legate Hill; flows southeastward 3½ miles into Deerfield River (tributary to the Connecticut) at Charlemont. Hawley sheet.

RICHARDSON BROOK.—Middlesex County; formed by the junction of Potash Brook and another small brook about 1½ miles north of Centralville, at altitude 100 feet above sea level; flows southeastward 1 mile into Trout Brook (tributary to the Merrimack); Potash Brook is considered the head of Richardson Brook. Lowell sheet.

RICHARDSONS POND.—Middlesex County; about 2½ miles west of Wakefield; inlet, Mystic River; outlet, Aberjona River, and thus through Mystic lakes and Mystic River to Boston Bay; altitude, 60 feet above sea level; length, about one-half mile; maximum width, less than one-fourth mile. Lawrence sheet.

RICHMOND POND.—Berkshire County; towns of Pittsfield and Richmond; several inflowing streams; outlet, Housatonic Branch (tributary through West Branch of Housatonic River to the Housatonic); one-half mile wide; three-fourths mile long. Pittsfield sheet.

RIVER MEADOW BROOK.—Middlesex County; rises about three-fourths mile southeast of Nashoba, at altitude 220 feet above sea level; flows northeastward 4½ miles, passing through Tophet Swamp, northwestward 1 mile, and again northeastward in an irregular course for 5 miles to its junction with Concord River (tributary to the Merrimack) at Lowell; fall from source to mouth, 120 feet; principal tributaries, House, Patch, Meadow, Farley, Putnam, Beaver, and Golden Cove brooks. Lowell sheet.

ROARING BROOK.—Berkshire County; rises near Washington village in the town of Washington; flows northwestward to its junction with Housatonic River in the town of Lenox; about 5 miles long; passes through Clapp Pond. Becket sheet.

ROARING BROOK.—Bristol County; a stream about 2 miles long flowing in general southeastward into New Bedford Reservoir (unused) at the head of Acushnet River (tributary to New Bedford Harbor). Middleboro sheet.

ROARING BROOK.—Franklin County; rises in the town of Conway 2 miles southwest of the village of Conway; flows southeasterly 5 miles to its junction with Mill River (tributary to the Connecticut); principal tributary, Popple Hill Brook. Northampton sheet.

ROARING BROOK.—Franklin County; town of Shutesbury. *See* Mill River.

ROARING BROOK.—Hampden and Hampshire counties; rises in the town of Chester, 2 miles northwest of Chester Center; flows southeasterly 5 miles to its junction with the West Branch of Westfield River (tributary through Westfield River to the Connecticut). Chesterfield and Granville sheets.

ROARING BROOK.—Hampshire and Hampden counties; rises on Norwich Hill in the town of Huntington; flows southwesterly 5 miles to its junction with Westfield River (tributary to the Connecticut). Chesterfield and Granville sheets.

ROBBIN POND.—Plymouth County; a pond one-half mile wide by one-sixteenth mile long, lying 4 miles east by north from Bridgewater; inlet, from Stump Pond; outlet, northward to Satucket River (tributary through Matfield River to Taunton River, and thus to Narragansett Bay). Abington sheet.

ROBBINS POND.—Barnstable County; one-half mile northeast of North Harwich. Yarmouth sheet.

ROBBINS POND.—Middlesex County; a small, marshy pond about 1½ miles southwest of Ayer, discharging by a stream 1½ miles long flowing northward into Nonacoicus Brook (tributary through Nashua River to the Merrimack). Groton sheet.

ROBERT MEADOW BROOK.—Hampshire County; rises 2 miles southwest of Battlecock Hill; flows southeastward 3 miles into Roberts Brook (tributary through Mill River to the Connecticut). Chesterfield sheet.

ROBERTS BROOK.—Hampshire County; rises on the south slope of Battlecock Hill; flows southeastward 4 miles, thence northeastward 3 miles into Mill River (tributary to the Connecticut) at Leeds; principal tributary, Robert Meadow Brook. Chesterfield and Northampton sheets.

ROBINSON BROOK.—Middlesex County; rises 1½ miles northeast of Townsend Harbor; flows west of south 1 mile, then southeastward 2 miles into Nashua River (tributary to the Merrimack); tributary, Bancroft Brook. Groton sheet.

ROBINSON CREEK.—Plymouth County; rises on the west slope of Long Hill, in the town of Marshfield; flows circuitously westward into North River; about 2 miles long. Abington sheet.

ROCHDALE POND.—Worcester County; just north of the village of Rochdale; on French River (tributary through Quinebaug River to Shetucket River, and thus through Thames River to Long Island Sound). Webster sheet.

ROCHE RUN.—Plymouth County; town of Hanson; a stream about one-half mile long, flowing northward into Indian Head River (tributary to North River). Abington sheet.

ROCK CREEK.—Barnstable County; a channel in the marsh north of Rock Harbor. Wellfleet sheet.

ROCK MEADOW BROOK.—Worcester County; rises on the south slope of Miscoe Hill; flows southwestward 3½ miles into West River (tributary to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

ROCK POND.—Essex County; just west of Georgetown; inlet, Parker River; outlet, Parker River (tributary to Plum Island River, and thus to the Atlantic Ocean) through Pentucket Pond; length, one-half mile; maximum width, about one-fourth mile; altitude, 100 feet above sea level. Lawrence sheet.

ROCKY BROOK.—Worcester County; rises on the east slope of Justice Hill, at altitude 770 feet above sea level; flows east of south 2 miles, then southwestward 1 mile into Stillwater River (tributary to Wachusett Reservoir). Worcester sheet.

ROCKY GUTTER BROOK, EAST.—Plymouth County; rises in the swamp north of South Middleboro; flows southward 2 miles and unites with West Rocky Meadow Brook to form Double Brook (tributary to Weweantic River and thus to Buzzards Bay). Middleboro sheet.

ROCKY GUTTER BROOK, WEST.—*See* Double Brook.

ROCKY MEADOW BROOK.—Plymouth County; rises 3 miles west of the village of Carver; flows southwestward 1 mile, then southeastward about 2 miles into Weweantic River (tributary to Buzzards Bay) below the mouth of Beaver Dam Brook. Middleboro sheet.

ROCKY POND.—Plymouth County; town of Plymouth; south of Clew Pond. Plymouth sheet.

ROCKY POND.—Plymouth County; town of Plymouth; three-fourths mile east of north end of White Island Pond. Plymouth sheet.

ROCKY POND.—Worcester County; 3 miles northwest of Northboro; outlet, a stream about 1 mile long flowing westward and then southeastward into Cold Harbor Brook (tributary through Assabet River to the Concord and thus to the Merrimack). Marlboro sheet.

ROCKY POND.—Worcester County; southeast of Bald Hill; outlet, a stream 1 mile long flowing northeastward into the reservoir at the head of Monoosnoc Brook (tributary through North Branch of Nashua River to Nashua River and thus to the Merrimack). Fitchburg sheet.

ROCKY RUN BROOK.—Bristol County; town of Rehoboth; rises 1 mile east of Bad Luck Swamp; flows southwestward about 6 miles, then northwestward and westward 2½ miles into Warren River (tributary to Narragansett Bay). Taunton and Providence sheets.

ROGERS BROOK.—Hampshire County; town of Goshen; rises a mile south of More Hill; flows southeastward 3 miles into Mill Brook (the head of the West Branch of Mill River, tributary through Mill River to the Connecticut). Chesterfield sheet.

ROOT POND.—Berkshire County; a small pond in the southwestern part of the town of Great Barrington, 1 mile northeast of South Egremont. Sheffield sheet.

ROSE BROOK.—Plymouth County; town of Wareham; a stream about 3 miles long, flowing east of south into Wareham River (tributary to Buzzards Bay) at Wareham Center. Plymouth sheet.

ROUND HOLE.—Plymouth County; town of Plymouth; a small pond 1 mile northeast of East Carver; north of Clear Pond; south of Old Colony Railroad line. Plymouth sheet.

ROUND MEADOW BROOK.—Worcester County; town of Mendon; a stream 1½ miles long flowing southeastward into Mill River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

ROUND POND.—Barnstable County; town of Barnstable; 2 miles west of Great Pond. Barnstable sheet.

ROUND POND.—Barnstable County; town of Wellfleet; one of a group of small pond northeast of the village of Wellfleet. Wellfleet sheet.

ROUND POND.—Berkshire County; a very small pond in town of Great Barrington; 2½ miles northwest of Van Deusenville. Sheffield sheet.

ROUND POND.—Essex County; 2½ miles northwest of Manchester; inlets, small streams from Beck and Coys ponds; outlet, a small stream to Chebacco Lake and thus to Essex River; altitude, 60 feet above sea level; length, about one-half mile; maximum width, less than one-fourth mile. Salem sheet.

ROUND POND.—Essex County; a small pond just north of Haverhill, 1 mile north of Merrimack River; altitude, 160 feet above sea level. Haverhill sheet.

ROUND POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the west-central part of the township. Plymouth sheet.

ROWLEY RIVER.—Essex County; a tidewater channel flowing from the junction of Bull Brook and Muddy Run, about three-fourths mile east of Rowley, northeastward 3 miles through the swamps into Plum Island River (separated from the Atlantic Ocean by Plum Island). Salem sheet.

RUDDOCK BROOK.—Franklin County; a stream a mile long flowing southeastward into Clesson Brook (tributary through Deerfield River to the Connecticut) west of Hog Mountain. Hawley sheet.

RUDD POND.—Berkshire County; town of Becket; a mile northwest of Becket Center; outlet, a northward flowing stream (tributary to a stream that enters West Branch of Westfield River which discharges to the Connecticut through Westfield River) at Becket. Becket sheet.

RUGGLES CREEK.—Norfolk County; a stream about 1½ miles long, tidal in its lower half, entering Weymouth Fore River north of Quincy Neck. Abington sheet.

RUMFORD RIVER.—Norfolk and Bristol counties; rises in Billings Pond in the town of Sharon; flows irregularly southward to Norton Reservoir, then southeastward to its junction with Wading River to form Threemile River (tributary through Taunton River to Narragansett Bay); length, 14 miles; passes through a number of small ponds. Dedham and Taunton sheets.

RUN BROOK.—Middlesex County; rises in a swamp 2 miles south of Maynard at altitude 180 feet above sea level; flows eastward through Willis Pond, then generally southward into Hop Brook (tributary through Wash Brook to Sudbury River and thus through Concord River to the Merrimack); length, 1½ miles. Framingham sheet.

RUNNING GUTTER BROOK.—Hampshire County; rises on the south slope of Chestnut Hill; flows in general southeasterly 3 miles, then north of east one-half mile into Mill River (tributary to the Connecticut); principal tributary, Broad Brook. Northampton sheet.

RUNNINS RIVER.—Bristol County, Mass., and Providence County, R. I.; rises on the southwest slope of Great Rock in the town of Rehoboth; winds very irregularly southwestward to Seekonk, thence southeastward along the Massachusetts-Rhode Island boundary 3 miles to Harrington River, through which it discharges to Warren River and thus to Narragansett Bay; length, 8 miles. Providence sheet.

RUN POND.—Barnstable County; town of Dennis; 1½ miles south of Scargo Lake. Yarmouth sheet.

RUSSELL POND.—Plymouth County; town of Kingston; on Smelt Brook (tributary to Jones River, which discharges into Massachusetts Bay through Kingston Bay) near mouth. Plymouth sheet.

RUSS POND.—Hampshire County; town of Prescott; a very small pond lying at the west base of Russ Mountain and discharging by a stream flowing southward and southeastward into the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown sheet.

RUTLAND BROOK.—Worcester County; rises one mile southwest of Hawes Hill in the town of Barre, and flows northwestward 2 miles and southwestward 1 mile into the East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Barre sheet.

SABRINA LAKE.—Norfolk County; about 1½ miles east of South Natick and one-half mile east of Charles River which is here flowing southward. Framingham sheet.

SACHEM BROOK.—Berkshire County; town of Lanesboro; rises between The Noppet and Potter Mountain; flows west and south 3½ miles, then southeastward one-half mile into the northwestern arm of Pontoosuc Lake; outlet, west branch of Housatonic River to Housatonic River; principal tributary, Hollow Brook. Berlin (reprint 1908) and Greylock sheets.

SACKER BROOK.—Middlesex County; rises about 1½ miles southwest of Pepperell, at altitude 310 feet above sea level; flows in a general northerly direction 3 miles into Nissitisset River (tributary through Nashua River to the Merrimack) 1 mile west of North Village. Groton sheet.

SACKETT BROOK.—Berkshire County; rises in the town of Washington, a mile north of Ashley Lake and 2½ miles northwest of Washington Station; flows northwesterly 3 miles, then south of west 2 miles into Housatonic River; principal tributary, Ashley Brook. Water is used for part of municipal supply of city of Pittsfield. Becket sheet.

SALISBURY PLAIN RIVER.—Norfolk and Plymouth counties; rises in the swamp northeast of Stoughton; flows southeasterly to a point near East Bridgewater, where it united with Beaver Brook and below which it is called Matfield River. *See* Matfield River. Called Saulsbury Brook between Brockton reservoir and Brockton. Dedham and Abington sheets.

SALMON BROOK, EAST BRANCH.—Hampden County, Mass., Hartford County, Conn.; rises on the eastern slope of South Mountain, in the southeastern part of the town of Granville; flows southeasterly to the southeastern part of Granby in Hartford County, Conn., where it enters Salmon Brook (tributary through Farmington River to the Connecticut.) Only about a mile of the head of this brook is in Massachusetts. Granville sheet.

SALMON BROOK.—Hillsboro County, N. H., and Middlesex County, Mass.; rises on the north slope of Snake Hill, 2 miles northeast of Ayer, at altitude 320 feet above sea level; flows northeastward through Cow Pond Meadows, Cow Pond, and Massapoag ponds to its junction with Merrimack River near Nashua, N. H.; principal tributaries, Martins Pond Brook; Baddacook Brook, and Black and Jointgrass brooks; called Cow Pond Brook above Massapoag ponds; length from Martins Pond to Merrimack River, about 15 miles; fall in the 8 miles below Lower Massapoag Pond, 60 feet. Groton, Lowell, and Manchester sheets.

SALT POND.—Barnstable County; town of Falmouth; southwest of the city of Falmouth; outlet, a short stream flowing southward into Vineyard Sound. Falmouth sheet.

SALT POND.—Plymouth County; town of Plymouth; in the marsh one-half mile north of Lookout Point; discharges into the Bay through a short southward flowing stream. Plymouth sheet.

SAMPSON BROOK.—Plymouth County; rises in the western part of the town of Plymouth; flows southwestward into Weweantic River (tributary to Buzzards Bay) about 2 miles southwest of South Carver; principal tributaries, streams from Federal and Sampson ponds; length, about 7 miles. Plymouth and Middleboro sheets.

SAMPSON BROOK.—Plymouth County; town of Kingston; rises in the northeastern part of the township; flows southward into Blackwater Pond on Halls Brook (tributary through Jones River to Kingston Bay, a branch of Massachusetts Bay). Duxbury sheet.

SAMPSON POND.—Plymouth County; town of Carver; principal inflowing stream, Tillson Brook; outlet, a stream nearly a mile long flowing southeastward into Sampson Brook (tributary through Weweantic River to Buzzards Bay). Plymouth and Middleboro sheets.

SAND BROOK.—Worcester County; rises about 1 mile southeast of Fitchburg at altitude 760 feet above sea level; flows northward into North Branch of Nashua River (tributary through Nashua River to the Merrimack) between Fitchburg and West Fitchburg; length, about 2 miles. Fitchburg sheet.

SANDERS BROOK.—Franklin County; rises in the southeastern corner of Whittington, Windham County, Vt., flows southeastward 3 miles into West Branch of North River (tributary through North River to Deerfield River and thus to the Connecticut). Hawley sheet.

SANDERSON BROOK.—Hampden County; rises a mile southwest of Green Hill; flows west of north 1½ miles, then northeastward 1½ miles into West Branch of Westfield River (tributary through Westfield River to the Connecticut). Granville and Chesterfield sheets.

SAND POND.—Barnstable County; one-fourth mile south of North Harwich; outlet, a stream three-fourths mile long flowing southward into Herring River (tributary to Nantucket Sound). Yarmouth sheet.

SANDY BROOK.—Berkshire County, Mass., Litchfield County, Conn.; rises 2 miles northwest of South Sandisfield; flows southeasterly 12 miles to its junction with Still River (tributary through Farmington River to the Connecticut) near Robertsville, in the town of Colebrook; length above Massachusetts line, about 4 miles. Sandisfield sheet.

SANDY POND.—Middlesex County; one-half mile northwest of Lincoln; no inlets mapped; outlet, Stony Brook to Charles River; altitude about 230 feet above sea level; one-half mile long. Framingham sheet.

SANDY POND.—Middlesex County; 1½ miles east of Ayer; inlet, from Long Pond; outlet through pond south of Ayer to Nonacoicus Brook (tributary through Nashua River to the Merrimack). Groton sheet.

SANDY POND.—Plymouth County; town of Plymouth; one-fourth mile east of White Island Pond. Plymouth sheet.

SANDY POND.—Watuppa Basin, Fall River. *See* Sawdy Pond.

SANTUIT POND.—Barnstable County; 1 mile north of the village of Cotuit; outlet, Cotuit River to Poponesset Bay, and thus to Nantucket Sound. Barnstable sheet.

SASSAQUIN POND.—Bristol County; town of New Bedford; outlet, Pamanset River to Slocums River and thus to Buzzards Bay. New Bedford sheet.

SATUCKET RIVER.—Plymouth County; formed in the town of East Bridgewater by the union of Poor Meadow Brook and the stream flowing from Robbin Pond, which receives the overflow from Monponset and Stump ponds and the Great Cedar Swamp in the town of Halifax. Poor Meadow Brook, which drains the larger area, is a continuation of Shumatuscacant River, which rises near North Abington and flows southeastward 7 miles to the junction; Poor Meadow Brook then flows west of south 3½ miles to the point at which it receives the stream from Robbin Pond; from this point Satucket River flows northwestward 2½ miles, thence southwestward and southward 2 miles into Matfield River (tributary through Taunton River to Narragansett Bay). The length of Satucket River from the head of Shumatuscacant River to Matfield River is about 15 miles. Abington sheet.

SAUGUS RIVER.—Essex and Middlesex counties; rises in the city of Reading, at altitude 100 feet above sea level; flows south of east 2 miles into Quannapowitt Lake, from which it flows eastward 2 miles into a swamp and then takes a general course southeastward for about 10 miles into Boston Bay at Lynn Harbor; principal tributaries, Beaver Dam, Hawkes, Revere, and Stony brooks; passes through Prankers Pond; marshy throughout much of its course; Boston, Boston Harbor, and Lawrence sheets.

SAULSBURY BROOK.—*See* Salisbury Plain River.

SAVERY POND.—Plymouth County; town of Plymouth; 1½ miles southwest of Center Hill Point and a mile west of the beach. Plymouth sheet.

SAWDY POND.—Bristol County; south of South Watuppa Pond into which it discharges; principal inlet, a stream from Devol Pond. Fall River sheet. *See also* Report of the Reservoir Commission to the city council of Fall River, Mass., July, 1902. Called Sandy Pond on the map.

SAW MILL BROOK.—Hampshire County; rises on the northeast slope of Bald Hill; flows northeastward 1 mile, southeastward 2½ miles to West Farms, then eastward and southeastward 4 miles into Manhan River (tributary to the Connecticut) at Easthampton; drains also the west slope of Saw Mill Hills. Northampton sheet.

SAW MILL BROOK.—Middlesex County; rises about one-fourth mile north of Punkatasset Hill, about 2 miles north of Concord, at altitude 160 feet above sea level; flows southeastward about three-fourths mile into Concord River (tributary to the Merrimack); marshy near its mouth. Framingham sheet.

SAW MILL BROOK.—Plymouth County; town of Bridgewater; rises about a mile south of the city of Bridgewater; flows in general west of south into Taunton River (tributary to Narragansett Bay) near Titicut; length, 3 miles. Middleboro sheet.

SAW MILL RIVER.—Franklin County; towns of Leverett and Montague; rises 1½ miles southeast of village of Dudleyville; flows northwestward 9 miles, then southwestward 1½ miles into the Connecticut; principal tributary, stream from Lock Pond, and Goddard and Pond brooks. Belchertown, Warwick, and Greenfield sheets.

SAWYER POND.—Franklin County, town of Northfield; north of Mount Hermon; inlet and outlet, Bennett Brook (tributary to Connecticut River). Warwick sheet.

Scantic Brook.—Hampden County; rises in the northern part of the town of Stafford, Conn.; flows northwestward 5 miles to Hampden, Mass., then southwesterly and southerly nearly 6 miles to North Somers, Conn., where it joins Whatchaug Brook to form Scantic River (tributary to the Connecticut); length above the Massachusetts line, about 8 miles; principal tributaries in Massachusetts, Big and West brooks. Palmer sheet.

Scargo Lake.—Barnstable County; town of Dennis; west and north of Scargo Hill and one-fourth mile south of Nobscusset Harbor. Yarmouth sheet.

Scarlet Brook.—Middlesex County; a stream about a mile long, rising in the swampy area south of Park Pond, 3 miles northwest of Lowell, and flowing southward into Merrimack River. Lowell sheet.

Schenob Brook.—Litchfield County, Conn.; Berkshire County, Mass.; rises in Twin Lakes, in the town of Salisbury, Conn.; flows in general northeasterly to Sheffield, Mass., where it enters Housatonic River; length, about 8 miles, of which nearly 7 miles is north of the Massachusetts-Connecticut boundary line; principal tributaries, Dry and Hubbard brooks. The lakes at the head are large and rather irregular in outline, that from which the stream flows being in general long and narrow, except at its southern end, and the other being roughly circular in outline. Sheffield sheet.

Schoolhouse Pond.—Barnstable County; three-fourths mile southwest of Brewster; outlet, a stream flowing northwestward through Freemans Pond into Cape Cod Bay. Wellfleet sheet.

Scooks Pond.—Plymouth County; town of Plymouth; a small pond lying one-eighth mile back from the shore about half way between Manomet and Stage points. Plymouth sheet.

Scorton Creek.—Barnstable County; a tidal channel in the Great Marshes west of Barnstable Harbor; Barnstable sheet.

Scorton Harbor Creek.—Barnstable County; town of Sandwich; a tidal channel in the marsh between East Sandwich station and Scorton Neck; connects with Long Creek. Barnstable sheet.

Scott Brook.—Worcester County; flows from Scott Reservoir into Baker Brook (tributary through North Branch of Nashua River to Nashua River, and thus to the Merrimack); length, about 1½ miles. Fitchburg sheet.

Scott Reservoir.—Worcester County; 2½ miles northwest of Fitchburg; outflowing stream, Scott Brook (tributary to Baker Brook and thus, through North Branch of Nashua and Nashua rivers, to the Merrimack). Fitchburg sheet.

Scudding Pond.—Bristol County; town of Taunton; 3 miles north of the city of Taunton; inlet, Mill River; outlet, Mill River to Taunton River (tributary to Narragansett Bay). Taunton sheet.

Sears Pond.—Barnstable County; south of Follins Pond on Bass River; connected with Kelleys Bay on Bass River by a short channel. Yarmouth sheet.

Second Brook.—Franklin County; town of Buckland; a stream a mile long, flowing east of north into Deerfield River (tributary to the Connecticut) about a mile east of the mouth of First Brook. Hawley sheet.

Second Brook.—Franklin County; town of Whately; a stream less than a mile long flowing southeastward into Connecticut River. Northampton sheet.

Second Brook.—Plymouth County; town of Kingston; a stream about three-fourths mile long flowing northwestward into Jones River 1 mile below mouth of Furnace Brook. Plymouth sheet.

Second Herring Brook.—Plymouth County; rises on the south slope of Mount Bluet in Black Pond Swamp; flows southeastward into North River in the town of Norwell; length, 3 miles. Abington sheet.

SECOND POND.—Hampden County; town of Ludlow; southeast of Ludlow City; outlet, a stream flowing north and west into Stony Brook (tributary to the Connecticut); very small. Palmer sheet.

SEEKONK BROOK.—Berkshire County; rises near West Stockbridge Center; flows southwesterly 2½ miles, then somewhat east of south 6 miles to the southwestern part of the town of Great Barrington, where it joins Green River (tributary to the Housatonic). Pittsfield and Sheffield sheets.

SEGREGANSET RIVER.—Bristol County; town of Dighton; rises about 2 miles east of North Rehoboth; flows southeastward 7 miles to its junction with Taunton River (tributary to Narragansett Bay) north of Dighton; principal tributary, Sunken Brook. Taunton sheet.

SENGEKONTACKET POND.—Dukes County; Marthas Vineyard; a tidal pond paralleling Vineyard Sound between Cottage City and Edgartown; separated from the sound by a narrow beach. Marthas Vineyard sheet.

SESACHACHA POND.—Nantucket County; Nantucket Island; east shore; a large pond south of Quidnet village; separated from the ocean by a narrow beach. Nantucket sheet.

SESSIONS BROOK.—Worcester and Hampden counties; rises in the town of Warren; flows southward 2½ miles into East Brook (tributary through Mill Brook to Quinebaug River and thus through Shetucket River to Thames River and Long Island Sound). Brookfield sheet.

SESUIT CREEK.—Barnstable County; town of Dennis; a channel in the tidal marsh west of East Dennis. Yarmouth and Wellfleet sheets.

SEVENMILE RIVER.—Norfolk and Bristol counties; rises in the town of Wrentham, Norfolk County; flows southeastward 4 miles, thence in general west of south 6 miles to its junction with Tenmile River (tributary through Seekonk River to Providence River and thus to Narragansett Bay) near Lebanon Mills; principal tributary, Fourmile Brook. Providence sheet.

SEVENMILE RIVER.—Worcester County; considered the head of Quaboag River, q. v.

SEWELL POND.—Worcester County; town of Boylston; a small pond near the head of Quinsigamond River (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay), which flows through it to Newton Pond. Marlboro sheet.

SEYMOUR BROOK.—Hampden County; rises in the southern part of the town of Granville; flows southeastward to the west base of South Mountain, then northeastward to its junction with Dickinson Brook (the head of Munn Brook, which is tributary through Westfield Little River to Westfield River and thus to the Connecticut); length, 2 miles. Granville sheet.

SEYMOUR POND.—Barnstable County; west of Long Pond and north of Hinckleys Pond; altitude, about 20 feet above sea level; one-half mile long. Yarmouth sheet.

SHAKER BROOK.—Berkshire County; a stream 1½ miles long, rising in the southeastern part of the town of Hancock and flowing southeastward into Housatonic Branch (tributary through west branch of the Housatonic to the Housatonic) just below the outlet of Richmond Pond. Pittsfield sheet.

SHAKER MILL POND.—Berkshire County; northern part of the town of West Stockbridge; principal inflowing streams, Cone Brook, Griffin Brook, and Flat Brook; outlet, Williams River to Housatonic River. Pittsfield sheet.

SHALLOW POND.—Barnstable County; town of Barnstable; east of the north half of Great Pond, from which it is separated on the west by a narrow ridge. Barnstable sheet.

SHALLOW POND.—Barnstable County; town of Falmouth; one of a group of ponds lying northwest of East Falmouth. Falmouth sheet.

SHALLOW POND.—Plymouth County; town of Plymouth; 1¼ miles south of the east end of Beaver Dam Pond. Plymouth sheet.

Shank Painted Pond.—Barnstable County; in the marsh one-half mile west of Provincetown. Provincetown sheet.

Shatterack Brook.—Hampden County; rises in Shatterack Pond, in the town of Montgomery; flows southwestward 2 miles into Westfield River (tributary to the Connecticut). Granville sheet.

Shatterack Pond.—Hampden County; 1 mile west of Montgomery; outlet, Shatterack Brook to Westfield River (tributary to the Connecticut). Granville sheet.

Shattuck Brook.—Windham County, Vt., Franklin County, Mass.; rises in the south-central part of the town of Guilford, Vt.; flows southeasterly 3 miles to Beaver Meadow in the town of Leyden, Mass., then somewhat south of east 2 miles to North Bernardston, where it joins Falls River (tributary to the Connecticut). Brattleboro and Greenfield sheets.

Shattuck Brook.—Worcester County; head of East Branch of Swift River. *See* Swift River.

Shaving Brook.—Plymouth County; town of Middleboro; a stream about a mile long flowing west of south into Fall Brook (tributary through Namasket River to Taunton River and thus to Narragansett Bay). Middleboro sheet.

Shaw Brook.—Worcester County; rises in Shaw Pond in the town of Leicester; flows northwestward 1½ miles, then westward 1 mile to Wire Village, where it enters Turkey Hill Brook (tributary through Sevenmile River to East Brookfield River and thus through Quaboag River to Chicopee River and the Connecticut). Worcester sheet.

Shaw Pond.—Berkshire County; 2 miles northwest of North Otis; two inflowing streams; outlet, a stream three-fourths mile long flowing southeastward into Farmington River (tributary to the Connecticut); about a mile long and one-eighth mile wide. Becket and Sandisfield sheets.

Shaw Pond.—Worcester County; town of Leicester; outlet, Shaw Brook to Turkey Hill Brook (tributary through Sevenmile River to East Brookfield River and thus through Quaboag River to Chicopee River and the Connecticut). Worcester sheet.

Shawsheen River.—Middlesex and Essex counties; rises 1 mile west of Lexington, at altitude 180 feet above sea level; flows generally northward about 4 miles, then northeastward about 18 miles into Merrimack River at North Andover; near Lowell Junction passes through a pond, unnamed on the map, on the south slope of Pole Hill; marshy through most of its course; principal tributaries, Kiln, Elm, Vine, Spring, Webb, Wright, Content, Heath, and Strongwater brooks. Framingham, Lowell, and Lawrence sheets.

Shaws Pond.—Hampden County; a small pond 1 mile northwest of Ludlow and north of Chicopee River (tributary to the Connecticut). Palmer sheet.

Sheep Pond.—Barnstable County; near South Brewster; one-half mile north of Long Pond. Yarmouth sheet.

Shepards Brook.—Norfolk County; rises about 2 miles northeast of Franklin, at altitude 220 feet above sea level; flows northwestward 2½ miles into Charles River. Franklin sheet.

Shepards Pond.—Norfolk County; 3 miles northeast of North Attleboro; principal inflowing stream drains the northeastern part of the town of Wrentham; outlet, a stream three-fourths mile long flowing eastward to Wading River (head of Threemile River, which is tributary through Taunton River to Narragansett Bay). Franklin sheet.

Shepardville Reservoir.—Norfolk County; a large pond about 1½ miles north of North Attleboro; two inflowing streams; natural outlet via Shepards pond. Franklin sheet.

SHEPHERD BROOK.—Franklin County; town of Buckland; a stream 1½ miles long flowing southeastward along the east base of Hog Mountain into Clesson Brook (tributary through Deerfield River to the Connecticut). Hawley sheet.

SHINGLE BROOK.—Franklin County; rises on the east slope of Brimstone Hill; flows west of south 3 miles into Deerfield River (tributary to the Connecticut). Greenfield sheet.

SHINGLE ISLAND RIVER. *See* Westport River, of which it is the head.

SHINGLE SWAMP BROOK.—Franklin County; rises 1½ miles southwest of Eagleville; flows northeastward 3 miles into Millers River (tributary to the Connecticut). Warwick sheet.

SHIP POND.—Plymouth County; town of Plymouth; 1 mile northwest of Center Hill Point; separated from Cape Cod Bay by a sand bar. Plymouth sheet.

SHIRLEY RESERVOIR.—Worcester and Middlesex counties; 1½ miles northwest of Shirley Village; through Catacoonamug Brook receives the waters of Unchechewhatong, Dead, and Massapoag ponds; outflowing stream passes through several small ponds and discharges into Nashua River (tributary to the Merrimack) one-half mile east of Shirley Village, Middlesex County; altitude about 320 feet above sea level; altitude of outflowing stream at entrance to Nashua River about 220 feet above sea level. Groton sheet.

SHIVERICKS POND.—Barnstable County; near the city of Falmouth; small. Falmouth sheet.

SHORTS BROOK. Plymouth County, town of Middleboro. *See* Fall Brook.

SHUBAEL POND.—Barnstable County; town of Barnstable; 2 miles west of Great Pond. Barnstable sheet.

SHUMATUSCACANT RIVER. *See* Satucket River.

SIBLEY RESERVOIR.—Worcester County; 1 mile north of the village of Sutton; outlet, a stream flowing eastward into Cold Spring Brook (tributary through Blackstone River to Seekonk River and thus through Providence River to Narragansett Bay). Webster sheet.

SILVER BROOK.—Berkshire County; town of Sandisfield; rises northwest of Cowles Hill; flows southeasterly 4 miles, then northeasterly 1 mile to West New Boston, where it joins Clam River (tributary through Farmington River to the Connecticut). Sandisfield sheet.

SILVER BROOK.—Plymouth County; town of Hanover; a stream about 1½ miles long flowing northeastward and entering Third Herring Brook (tributary to North River) 2 miles below Jacob Pond. Abington sheet.

SILVER BROOK.—Worcester County; rises 1 mile north of Ridge Hill; flows northward 2 miles into East Branch of Swift River (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut). Barre sheet.

SILVER LAKE.—Berkshire County; in Pittsfield; outlet, a very short stream flowing southward into Housatonic River. Becket sheet.

SILVER LAKE.—Middlesex County; a small pond 1 mile west of Wilmington Center, a short distance west of Lubber Brook (tributary to Ipswich River); altitude about 90 feet above sea level. Lawrence sheet.

SILVER LAKE.—Plymouth County; inlet, Tubbs Meadow Brook (considered head of Jones River); natural outlet, Jones River to Kingston Bay; lake is about 2 miles long by one-half mile wide, and is used as a source of municipal supply for the city of Brockton. Abington sheet.

SILVER LAKE.—Worcester County; town of Grafton; inlet, Miscoe Brook (head of West River); outlet, West River to Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay). Blackstone sheet.

SIMMONS PONDS.—Barnstable County; town of Dennis; two small ponds 1¼ miles southeast of Scargo Hill. Yarmouth sheet.

SIMON POND.—Berkshire County; extreme southeastern part of the town of Sandisfield; two small inflowing streams; outlet, a stream 1½ miles long flowing north and east into the head of Farmington River (tributary to the Connecticut). Sandisfield sheet.

SINGLETARY BROOK.—Worcester County; rises 1 mile north of West Sutton; flows northeastward through Singletary Pond into Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay) at Millbury; about 5 miles long. Webster sheet.

SINGLETARY POND.—Worcester County; a mile northwest of Sutton; inlet and outlet, Singletary Brook (tributary to Blackstone River and thus through Seekonk River to Providence River and Narragansett Bay); 1½ miles long; one-half mile wide. Webster sheet.

SINKING POND.—Middlesex County; a very small pond about one-half mile west of Westvale; one-fourth mile west of Assabet River (tributary through Concord River to the Merrimack); altitude 160 feet above sea level. Framingham sheet.

SIPPICON RIVER, EAST BRANCH.—Plymouth County; rises 1 mile northeast of South Middleboro; flows southeastward 2½ miles, southward 3 miles, then southwestward 1½ miles to the head of Leonards Pond, where it unites with West Branch to form Sippicon River (tributary through Weweantic River to Buzzards Bay). Middleboro sheet.

SIPPICON RIVER.—Plymouth County; formed in the town of Rochester by the union of the east and west branches. The West Branch, which drains the larger area, and is therefore considered the continuation of the river, rises one-half mile southwest of South Middleboro and flows southeasterly to Leonards Pond, where it receives the East Branch; passing through Leonards Pond the river flows east of south about 2 miles, then very irregularly eastward to its junction with Weweantic River (tributary to Buzzards Bay); length to head of West Branch, 10 miles; principal tributaries below East Branch, Doggetts Brook, and Hammond Brook. Middleboro and New Bedford sheets.

SIPPICON RIVER, WEST BRANCH. *See* Sippicon River.

SIP POND BROOK.—Cheshire County, N. H., and Worcester County, Mass.; a stream 3 miles in length flowing in a general southerly direction from Sip Pond in the town of Fitzwilliam, N. H., to Millers River (tributary to the Connecticut) 2 miles west of Winchendon; principal tributaries, a stream one-half mile long from the mill ponds near State Line, N. H., and a stream 3 miles long from Robbins Pond (in the town of Rindge, N. H.). Winchendon sheet.

SKINEQUIT POND.—Barnstable County; at South Harwich. Yarmouth sheet.

SKUG RIVER.—Essex and Middlesex counties; rises in a swamp on the south slope of Holts or Prospect Hill, about 1½ miles southeast of Andover, at altitude 180 feet above sea level; flows southward 3½ miles, then westward through a swamp for 1½ miles into Martins Pond (head of Martins Brook, which is tributary to Ipswich River). Lawrence sheet.

SLAB BROOK.—Hampden County; name is applied to two brooks, both tributary to Great Brook (tributary through Westfield River to the Connecticut) within a mile. The longer of these streams rises 1½ miles northwest of Southwick Hill; the head of the other is half a mile north of Round Hill; both streams flow easterly; the longer is about 2½ miles long and the shorter less than 2 miles. Granville and Springfield sheets.

SLATERS RESERVOIR.—Worcester County; town of Charlton; on Little River (tributary through French River to Quinebaug River and thus through Shetucket and Thames Rivers to Long Island Sound). Webster sheet.

SLOCUM BROOK.—Hampden County; rises in Cranberry Pond, in the southeastern part of the town of Tolland; flows southwesterly 4 miles to its junction with the Farmington River (tributary to the Connecticut) in the northeastern part of Colebrook, Conn. Sandisfield sheet.

SLOCUMS RIVER.—Bristol County; town of Dartmouth; an arm of Buzzards Bay between Slocums Neck and Smiths Neck; principal tributary, Pamanset River; tidal. New Bedford sheet.

SLOUGH BOND.—Barnstable County; town of Wellfleet; one of a group of ponds northeast of Wellfleet village; outlet, through Herring Pond and Herring River to Wellfleet Harbor, Cape Cod Bay. Wellfleet sheet.

SLUICE BROOK.—Franklin County; town of Shelburne; rises on The Patten 1 mile northeast of Bald Mountain; flows southward 3 miles into Deerfield River (tributary to the Connecticut), 2 miles below Shelburne Falls. Greenfield sheet.

SMALL BROOK.—Hampden County; rises in a small pond 1 mile north of McCarthy Hill; flows northwestward 1 mile, then northward 1 mile into the South Branch of Mill River (tributary through Mill River to the Connecticut). Springfield sheet.

SMALL POND.—Barnstable County; 2½ miles north of Hyannis; west of south end of Israels Pond. Barnstable sheet.

SMEAD BROOK.—Franklin County; a stream 2 miles long flowing eastward into Green River (tributary through Deerfield River to the Connecticut) at Greenfield. Greenfield sheet.

SMELT BROOK.—Plymouth County; town of Kingston; rises in Little Smelt Pond; flows northwestward into Smelt Pond, then in general northeastward into Jones River (tributary through Kingston Bay to Massachusetts Bay) one-half mile above its mouth; length, 2½ miles. Plymouth sheet.

SMELT POND.—Plymouth County; town of Kingston; inlet from Little Smelt Pond; outlet, Smelt Brook to Jones River (tributary through Kingston Bay to Massachusetts Bay). Plymouth sheet.

SMITH BROOK.—Berkshire County; rises on Tower Mountain in the town of Hancock, and flows southeastward 4 miles into Housatonic Branch (tributary through west branch of Housatonic River to the Housatonic) one-half mile northeast of Lower Barkerville. Pittsfield sheet.

SMITH BROOK.—Berkshire County; town of Florida; a stream about 1½ miles long, flowing southeastward into Deerfield River (tributary to the Connecticut) in the northeastern part of the town. Hawley sheet.

SMITH BROOK.—Worcester County; town of Barre; a stream 1½ miles long flowing southeastward into Prince River (tributary through Ware River to Chicopee River and thus to the Connecticut). Barre sheet.

SNAKE POND.—Barnstable County; town of Sandwich; one-half mile west of Forest Dale. Falmouth sheet.

SNIPATUIT POND.—Plymouth County; 1½ miles southeast of Great Quittacas pond; outlet, Mattapoisett River to Buzzards Bay; a large pond containing several small islands. Middleboro sheet.

SNOWS POND.—Barnstable County; a small pond 2 miles north of the village of Wellfleet. Wellfleet sheet.

SNOWS POND.—Plymouth County; town of Rochester; three-fourths mile southeast of the southern end of Snipatuit Pond. Middleboro sheet.

SODDEN BROOK.—Hampshire County; rises on the east slope of Red Oak Hill; flows northeastward 3 miles, then eastward three-fourths mile into North Branch of Manhan River (tributary through Manhan River to the Connecticut). Chesterfield sheet.

SOLOMON POND.—Worcester County; a small pond 2 miles northeast of Northboro, one-half mile west of Assabet River (tributary through Concord River to the Merrimack). Marlboro sheet.

SOUGHT FOR POND.—Middlesex County; 2 miles northwest of Westford station; outlet, Spaulding Brook to Keyes Pond and thus through Keyes Brook and Stony Brook to the Merrimack; altitude, about 200 feet above sea level; length, about three-fourths mile; maximum width, one-half mile.

SOUHEGAN RIVER.—Rises in the northern part of Worcester County, Mass., in Stodgemeadow Pond, on the north slope of Mount Hunger, at altitude 1,110 feet above sea level; flows in a general northeasterly direction to Wilton, N. H., where it is joined by Stony Brook, then eastward to its junction with Merrimack River at Merrimack, N. H., length, about 30 miles. Only a small part of the area drained by Souhegan River lies in Massachusetts.

The fall of the stream is very large and its bed and banks are rocky. It affords numerous power sites.

Mean annual precipitation in this basin, about 42 inches; average depth of snowfall in January and February, about 18 inches. Gaging station at Merrimack, N. H., 1909–1915. Fitchburg and Peterboro sheets.

SOUTH BRANCH. *See* significant name.

SOUTH BROOK.—Berkshire County; rises between North Mountain and Weston Mountain, in the town of Dalton; flows east of north 1½ miles, then northwestward 2 miles to Cheshire, where it enters Hoosic River (tributary to the Hudson). Greylock sheet.

SOUTH BROOK.—Plymouth County; town of Bridgewater; rises just west of the city of Bridgewater; flows southeastward 1 mile, irregularly northeastward 2 miles, then west of north 1 mile into Town River (tributary through Matfield to Taunton River and thus to Narragansett Bay). Middleboro sheet.

SOUTH GARDNER RESERVOIR.—Worcester County; town of Gardner; about 2 miles southeast of the city of Gardner; overflow passes northward to a pond on Pew Brook (tributary through Foster Brook to Otter River and thus through Millers River to the Connecticut). Fitchburg sheet.

SOUTH MEADOW BROOK.—Plymouth County; head of Weweantic River (tributary to Buzzards Bay). *See* Weweantic River.

SOUTH MEADOW BROOK.—Worcester County; town of Shrewsbury; rises northwest of the village of South Shrewsbury; flows southwestward and southward into Lake Quinsigamond (outlet, Quinsigamond River to Blackstone River and thus through Seekonk and Providence Rivers to Narragansett Bay); length, 2½ miles. Marlboro sheet.

SOUTH POND.—Berkshire County; town of Florida; one-half mile southeast of North Pond; outlet, Gulf Brook to Cold River (tributary through Deerfield River to the Connecticut). Greylock sheet.

SOUTH POND.—Essex County; 2½ miles west of Methuen, about one-half mile south of the Massachusetts-New Hampshire boundary line, at altitude 160 feet above sea level; outlet, a stream about one-half mile long flowing northeastward into a much larger stream (tributary through Spickett River to the Merrimack); length, about one-half mile; width, about one-fourth mile. Lawrence sheet.

SOUTH RIVER.—Franklin County; towns of Ashfield and Conway; rises on the north slope of Peter Hill; flows southeastward 2 miles, passing through Great Pond, thence very circuitously eastward to its junction with Deerfield River (tributary to the Connecticut); length, 14 miles. Hawley and Greenfield sheets.

SOUTH RIVER.—Plymouth County; rises in the town of Duxbury near Little Creek Pond; flows northwestward 4 miles, then northeastward 5 miles, and enters Massachusetts Bay at the mouth of North River. Duxbury sheet.

SOUTHWICK CREEK.—Berkshire County; town of Adams; a stream 2 miles long flowing westwardly into Hoosic River (tributary to the Hudson) near Renfrew. Greylock sheet.

SPAULDING BROOK.—Middlesex County; rises in Sought For Pond, about 2 miles northwest of Westford station (Stony Brook Railroad); flows northwest one-fourth mile, southwest about one-half mile, then southeast one-half mile into Keyes Pond; outlet, through Keyes Brook to Stony Brook and thus to the Merrimack. Lowell sheet.

SPECTACLE POND.—Barnstable County; one of a group of ponds north of the village of Farmersville. Barnstable sheet.

SPECTACLE POND.—Barnstable County; town of Falmouth; 1½ miles northwest of East Falmouth. Falmouth sheet.

SPECTACLE POND.—Berkshire County; 2 miles southwest of village of Otis; a pond about a mile long; elevation, 1,420 feet above sea level; principal inlet, a stream about 3 miles long entering from the north; outlet through a stream one-half mile long to Clam River (tributary through Farmington River to the Connecticut). Sandisfield sheet.

SPECTACLE POND.—Hampshire County; town of Wilbraham; west of North Wilbraham and one-half mile south of Chicopee River (tributary to the Connecticut); about one-tenth mile from Nine Mile Pond. Palmer sheet.

SPECTACLE POND.—Middlesex County, near North Littleton station; inlet, Bennett Brook; outlet, Bennett Brook to Forge Pond (tributary through Stony Brook to the Merrimack); about 1 mile long. Groton sheet.

SPECTACLE POND.—Plymouth County; town of Wareham; 1½ miles north of Onset; discharges by a short stream flowing northward into Agawam River (tributary through Wareham River to Buzzards Bay); inlet, a stream from Cedar Pond. Plymouth sheet.

SPECTACLE POND.—Franklin County; town of New Salem; two ponds connected by a short northward-flowing stream and discharging from the northern pond by a stream flowing northward to Millers River and thus to the Connecticut); inlet to the north pond, a stream about a mile long flowing north from Hacker Pond. Warwick sheet.

SPECTACLE POND.—Worcester County; a pond about one-fourth mile wide, which discharges by a stream a mile long flowing southeastward and then southwestward into North Branch of Nashua River (tributary through Nashua River to the Merrimack); inlet from Little Spectacle Pond. Groton sheet.

SPENCER BROOK.—Middlesex County; rises one-half mile west of Carlisle, at altitude 180 feet above sea level, flows generally southward 5 miles into Assabet River (tributary through Concord River to the Merrimack); swampy through a large part of its course. Lowell and Framingham sheets.

SPICKETT RIVER.—Rockingham County, N. H., Essex County, Mass.; rises in the town of Derry, Rockingham County, N. H., about 3 miles northeast of East Derry, at altitude about 365 feet above sea level; flows southeastward 4 miles into Island Pond, then takes an irregular course southward 9½ miles, crosses into Essex County, Mass., and continues southeastward for 5 miles to Merrimack River at Lawrence; principal tributaries in Massachusetts, streams from South and Mystic ponds. Haverhill and Lawrence sheets.

SPOFFORDS POND.—Essex County; head of Pye Brook, 2 miles southeast of West Boxford; altitude, about 120 feet above sea level; outlet, Pye Brook (tributary through Mile Brook to Ipswich River); small. Lawrence sheet.

SPOONER POND.—Plymouth County; town of Plymouth; 1 mile west of High Cliff; discharges by a stream one-fourth mile long, flowing northward into Plymouth Bay. Plymouth sheet.

SPOT POND.—Middlesex County; about a mile west of Melrose; length, about a mile; maximum width, about one-half mile; part of the reservoir system of the metropolitan water district of Boston and vicinity. Boston sheet.

SPRING BROOK.—Middlesex County; rises in Fawn Lake near Billerica Springs station about 1½ miles north of Bedford, at altitude about 180 feet above sea level; flows southeastward 1½ miles into Shawsheen River (tributary to the Merrimack) 1 mile east of Bedford; marshy near mouth; fall about 60 feet. Lowell and Framingham sheets.

Spring Brook.—Plymouth County; town of Bridgewater; a stream 1½ miles long flowing southeastward into Taunton River (tributary to Narragansett Bay), about 1½ miles southwest of the mouth of Wenatuxet River; tributary, Beaver Brook. Middleboro sheet.

Spring Brook.—Worcester County; town of Mendon; rises a mile south of the village of Mendon, flows southward one mile, and eastward 1½ miles into Muddy Brook (tributary through Mill River to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Blackstone sheet.

Spring Creek.—Barnstable County; a tidal channel in the Great Marshes west of Barnstable Harbor; connects with Bridge Creek. Barnstable sheet.

Spring Hill Creek.—Barnstable County; town of Sandwich; a tidal channel in the marsh east of Sandwich; connects with Old Harbor Creek. Barnstable sheet.

Spring Pond.—Essex County; about one-half mile north of Lynn; outlet, Tapley Brook (tributary to North River and thus to the Atlantic Ocean); altitude, about 80 feet above sea level; length, about one-half mile; maximum width, about one-fourth mile. Boston Harbor sheet.

Springy Pond.—Middlesex County; 2½ miles southeast of Groton, immediately south of Knop Pond (tributary through Cow Pond and Cow Pond Brook to Salmon Brook and thus to the Merrimack), with which it is connected by a very small stream. Groton sheet.

Spurr Lake.—Berkshire County; western part of the town of Sheffield; outlet, a stream a mile long flowing southeastward into Willard Brook (tributary through Hubbard Brook to Schenob Brook and thus to the Housatonic). Sheffield sheet.

Spy Pond.—Middlesex County; at Arlington and about a mile west of Somerville; length, about one-half mile; maximum width, about one-fourth mile; natural outlet, a small stream to Little Pond and thus through Little River to Alewife Brook (tributary to Mystic River), formerly part of the reservoir system of Boston and vicinity. Boston sheet.

Squam Pond.—Nantucket County; Nantucket Island; a narrow pond a mile northwest of the village of Quidnet; separated from the ocean by a narrow beach. Nantucket sheet.

Squam River.—Essex County; a tidewater channel about 3 miles long between Gloucester Harbor and Annisquam Harbor; Little, Jones, and Mill rivers are tidewater channels tributary to Squam River, the two latter joining Squam River at its mouth. Gloucester sheet.

Squannacook River.—Middlesex County; rises in the northern part of the county in Ash Swamp, which receives the waters of Mason and Walker brooks draining the southern part of the town of Mason, N. H., and Locke and Willard brooks of the town of Ashby, Mass.; from Ash Swamp the Squannacook flows southeastward about 12 miles to its junction with Nashua River (tributary to the Merrimack) 2 miles southeast of West Groton; fall from Ash Swamp to Nashua River, about 100 feet; principal tributaries below the swamp, Pearl Hill, Baberry Hill, Witch, Trout, and Pumpkin brooks, all from the west. Fitchburg and Groton sheets.

Squibnocket Pond.—Dukes County; Marthas Vineyard; Gayhead; a large pond separated from the ocean by Squibnocket Beach on the west and a narrow-walled beach on the east. The pond is about 1½ miles long (east-west) and more than a mile in maximum width. Gayhead sheet.

Staceys Brook.—Essex County; rises in Glenmere Lake and flows generally southeastward 2 miles through the city of Lynn into Nahant Bay. Geologic map of Essex County, Mass.

Stafford Pond.—Newport County, R. I.; outlet, Sucker Brook to North Watuppa Pond (outlet through Quequechan River to Taunton River, and thus to Narragansett Bay). A dam and flume at the outlet of the pond provide means for holding back the flow for use in mills at Fall River. Report of the reservoir commission to the city council of Fall River, Mass., July, 1902. Fall River sheet.

STEEL BROOK.—Franklin County; a stream about 2 miles long flowing east of south into Pelham Brook (tributary through Deerfield River to the Connecticut) one-half mile north of Zoar. Hawley sheet.

STEEP BROOK.—Bristol County; town of Fall River; a stream about 1½ miles long flowing westward into Taunton River (tributary to Narragansett Bay) at Steep Brook village. Fall River sheet.

STEEP GUTTER BROOK.—Worcester County; rises near Williamsville, in the town of Hubbardston; flows southeastward 2½ miles, then northeastward one-half mile into Burnshirt River (tributary through Ware River to Chicopee River, and thus to the Connecticut). Barre sheet.

STETSON POND.—Plymouth County; 1 mile north of the east end of Monponset Pond, to which it discharges by a southward-flowing stream. Abington sheet.

STEVEN BROOK.—Hampshire County; rises 1½ miles northwest of Worthington Corners; flows southeastward 1½ miles, then northeastward one-half mile into Bronson Brook, the head of West Branch (tributary through Westfield River to the Connecticut). Chesterfield sheet.

STEVEN BROOK.—Worcester County; rises 1½ miles south of Barre Falls; flows southeastward one-half mile, then northeastward 1 mile into the swamp on Ware River (tributary through Chicopee River to the Connecticut) southeast of Barre Falls. Barre sheet.

STEVENS BROOK.—Hampden County; town of Holland; rises in the extreme northeastern part of the town of Stafford, Conn.; flows northeastward about 2 miles, then somewhat north of east 2 miles into Hamilton Reservoir (outlet through Holland Pond to Mill Brook, and thus through Quinebaug River to Shetucket River, Thames River, and Long Island Sound). Brookfield sheet.

STEVENS POND.—Essex County; a small pond at Lawrence; inlet, Spickett River; outlet, Spickett River to the Merrimack. Lawrence sheet.

STEWARDS POND.—Barnstable County; town of Barnstable; a mile north of the west end of Great Pond. Barnstable sheet.

STILES POND.—Essex County; about 3 miles east of North Andover Center; outlet, a stream about a mile long to Mosquito River (tributary to Ipswich River); altitude, about 120 feet above sea level; length, about one-half mile; maximum width, about one-fourth mile. Lawrence sheet.

STILES RESERVOIR.—Worcester County; town of Spencer; outlet, a stream about a mile long flowing southeastward into Greenville Reservoir on French River (tributary through Quinebaug River to Shetucket River, and thus through Thames River to Long Island Sound). The reservoir is about 2 miles long and more than half a mile wide. Webster sheet.

STILL BROOK—Hampden County; town of Agawam; rises in the northwestern part of the township; flows southeastward 3½ miles, then passes into Connecticut and joins Muddy Brook (tributary through Stony Brook to the Connecticut) in the town of Suffield, Hartford County. Springfield and Hartford sheets.

STILL RIVER.—Worcester County; about a mile east of Lancaster, at altitude about 240 feet above sea level; flows northeastward 2 miles, then northwestward one-fourth mile into Nashua River (tributary to the Merrimack). Marlboro sheet.

STILLWATER RIVER.—Worcester County; rises in a small lake at East Princeton, at altitude 750 feet above sea level; takes a general southeasterly course to Wachusett Reservoir near Oakdale; principal tributaries, Keyes Brook, which flows into the lake at its head, and Justice, East Wachusett, and Rocky brooks.

STILLWATER RIVER.—Worcester County; a stream about 2 miles long flowing from West Waushaccum Pond into Wachusett Reservoir. Worcester sheet.

STIRRUP BROOK.—Rises about 1 mile northwest of Westboro; flows irregularly northward, passing through Chauncey, Little Chauncey, and Bartlett ponds, and discharges into Assabet River (tributary through Concord River to the Merrimack) about 2 miles northeast of Northboro; length, 5 miles. Marlboro sheet.

STOCKBRIDGE BOWL.—Berkshire County; a large pond in the northern part of the town of Stockbridge; northwest of Rattlesnake Hill; two inflowing streams, one of which is considered the head of Marsh Brook; outlet, Marsh Brook to Housatonic River. The bowl is more than a mile long, and its maximum width is about three-fourths mile. Pittsfield sheet.

STODDARD POND.—Worcester County; 2 miles southwest of Winchendon Center; two small inflowing streams; outlet, a stream 1½ miles long flowing westward into Otter River (tributary through Millers River to the Connecticut). Winchendon sheet.

STODGE MEADOW POND.—Worcester County; north slope of Mount Hunger, at altitude about 1,110 feet above sea level; inlet, Whitemans Brook; outlet, Souhegan River (tributary to Merrimack River); about three-fourths mile long; area, 127 acres. Fitchburg sheet.

STONE BROOK.—Worcester County; town of Millbury; rises on the southwest slope of Grass Hill; flows northeastward into Ramshorn Brook (tributary through Kettle Brook to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay) near Pondville; length, about 2 miles. Webster sheet.

STONES BROOK.—Franklin and Hampshire counties; rises in the town of Ashfield; flows in general west of south 4 miles, then almost west 1 mile to its junction with Swift River (tributary through Westfield River to the Connecticut). Hawley and Chesterfield sheets.

STONEVILLE RESERVOIR.—Worcester County; town of Auburn; 1 mile southwest of Stoneville; inlet, Dark Brook; outlet, Dark Brook to Kettle Brook (tributary to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay). Webster sheet.

STONY BROOK.—Hampshire County; rises on Bagg Hill, in the town of Granby; flows southwestward 3½ miles, thence in general northwestward to its junction with Connecticut River, 1½ miles west of South Hadley; length, about 10 miles; apparently called Muddy Brook for a short stretch of its middle course Palmer, Springfield, and Northampton sheets.

STONY BROOK.—Middlesex County; rises about 1 mile southwest of Boxboro, at altitude about 330 feet above sea level; flows northeastward to its junction with Merrimack River at North Chelmsford; passes through Mill and Forge ponds. Above Forge Pond it is called Beaver Brook; length from head of Beaver Brook to Forge Pond, 9 miles; from outlet of Forge Pond to Merrimack River, 8 miles; principal tributaries below Forge Pond are Keyes Brook and Gilson Brook. The basin contains a number of ponds, of which Newfield, Nabnasset, Flushing, Sought For, Keyes, Forge, Mill, and Spectacle are the largest. Marlboro, Groton, and Lowell sheets.

STONY BROOK.—Middlesex County; rises in Sandy Pond, one-half mile northwest of Lincoln, at altitude about 230 feet above sea level; flows in a general southeasterly course into Charles River in the town of Weston; length, about 7 miles; principal tributaries, Cherry and Hobbs Brooks. Framingham sheet.

STONY BROOK.—Plymouth County; a stream about a mile long, flowing southeastward and entering North River 1½ miles below Second Herring Brook. Abington sheet.

STONY BROOK.—Plymouth County; town of Carver; head of Wenatuxet River (tributary through Taunton River to Narragansett Bay); a westward flowing stream about 2½ miles long, joining Wenatuxet River near the village of North Carver. Middleboro sheet.

STONY BROOK.—Plymouth County; town of Middleboro; a stream about a mile long flowing southward into Furnace Pond on Fall Brook (tributary through Namasket River to Taunton River and thuse to Narragansett Bay). Middleboro sheet.

STONY BROOK.—Suffolk County; rises near East Dedham, in the Stony Brook Reservation; flows in general east of north to Jamaica Plain, where it is taken into the sewers. Boston sheet.

STOP RIVER.—Norfolk County; rises about 1½ miles northwest of Wrentham, at altitude 220 feet above sea level; flows northeastward to a point about a mile south of Highland, then irregularly northward to its junction with Charles River; length, about 10 miles; passes through Reservoir Marsh Pond. Franklin sheet.

STREAM RIVER.—Plymouth County; towns of Abington and Whitman; rises 1½ miles northwest of Whitman; flows northwestward nearly a mile, northeastward one-half mile, then southeastward 2 miles into Shumatuscacant River (head of Satucket River, which is tributary through Matfield River to Taunton River and thus to Narragansett Bay). Abington sheet.

STRONGS POND.—Suffolk and Middlesex Counties; one-half mile northwest of Chestnut Hill Reservoir; one inlet; outlet eastward to Chandler Pond, which is drained by a stream flowing northward into Charles River. Boston sheet.

STRONGWATER BROOK.—Middlesex County; rises just northeast of North Tewksbury, about 2½ miles east of Lowell, at altitude 180 feet above sea level; flows southeastward about 2 miles, southward 1½ miles, and again southeastward 1 mile into Shawsheen River (tributary to the Merrimack) about 2 miles southeast of Tewksbury Center. Lawrence sheet.

STUMP POND.—Plymouth County; town of Halifax; a long narrow pond in the southern part of Great Cedar Swamp; connected with a narrow channel by Monponset Pond; outlet, a stream a mile long flowing north of west to Robbin Pond, which discharges to Satucket River (tributary through Matfield River to Taunton River and thus to Narragansett Bay). Abington and Middleboro sheets.

SUCKER BROOK.—Bristol County, Mass., and Newport County, R. I.; rises in Stafford Pond in Newport County, R. I.; flows west of north 1 mile and northeastward 1½ miles into South Watuppa Pond; outlet through Quequechan River to Taunton River and thus to Narragansett Bay. Fall River sheet. *See also* Report of the Reservoir Commission to the city council of Fall River, Mass., July, 1902.

SUCKER BROOK.—Worcester County; rises on the southeast slope of Fort Hill; flows soutwestward 2 miles, then southeastward 1 mile into Lake Chaubunagungamaug outlet, Mill Brook to French River (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Webster sheet.

SUCKER BROOK.—Worcester County; town of New Braintree; the head of Mill Brook (tributary through Wickaboag Pond to Quaboag River and thus through Chicopee River to the Connecticut); length of the stretch called Sucker Brook, about 4 miles. Barre sheet.

SUCKER BROOK.—Worcester County; town of West Brookfield; rises on the north slope of Wigwam Hill; flows southwestward 2 miles into Mill Brook just above the point at which that stream discharges into Wickaboag Pond (outlet Quaboag River to Chicopee River and thus to the Connecticut). Barre sheet.

SUCKER POND.—Middlesex County; a small pond a mile north of South Framingham and one-half mile east of Sudbury River; outlet, a stream three-fourths mile long flowing southwestward into Sudbury River (tributary through Concord River to the Merrimack); altitude, about 170 feet above sea level; Framingham sheet.

SUDBURY POND.—Middlesex County; in the town of Saxonville; inlet, Sudbury River to Concord River and thus to the Merrimack); altitude, about 150 feet above sea level. Framingham sheet.

SUDBURY RIVER.—Middlesex County; a small stream of eastern Massachusetts; formerly received water from an area west of Framingham but is now fed chiefly by streams that enter it north and east of Framingham. Drainage area now 17.58

square miles. It flows thence in a northerly course through meadows and swamps and joins Assabet River to form Concord River, which in turn continues northward and enters Merrimack River immediately below the city of Lowell. Storage reservoirs have been constructed by the city of Boston and the Metropolitan Water and Sewerage Board, controlling the greater part of the flow from this basin.

Lake Cochituate lies in the Sudbury basin a short distance below Framingham. It is controlled as a storage reservoir by the Metropolitan Water Works. *See also* pages 295–298 of this report.

SUGARLOAF BROOK.—Franklin County; rises on the west slope of North Sugarloaf; flows southwestward three-fourths mile, then southeastward 2 miles into Connecticut River. Northampton sheet.

SUNK BROOK.—Hampshire County; town of Enfield; rises about 2 miles east of the city of Enfield; flows northwestward 2 miles through Sunk Pond into Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown sheet.

SUNKEN BROOK.—Bristol County; town of Dighton; rises 1 mile west of North Dighton; flows southeastward into Segreganset River (tributary through Taunton River to Narragansett Bay); 2½ miles long. Taunton sheet.

SUNK POND.—Hampshire County; town of Enfield; south of Mount Lizzie on Sunk Brook (tributary through Swift River to Ware River and thus through Chicopee River to the Connecticut); very small. Belchertown sheet.

SUNK POND.—Worcester County; town of Dana; 1½ miles northwest of Pottapaug Hill; outlet, a stream about 2 miles long flowing northwestward into the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut). Belchertown sheet.

SUNTAUG LAKE.—Middlesex County; 2½ miles east of Wakefield; no inlet shown on the map; outlet, a stream 3½ miles long flowing northward into Ipswich River; altitude about 80 feet above sea level; length, one-half mile; maximum width, about one-half mile. Lawrence sheet.

SWAMP BROOK.—Plymouth County; town of Pembroke; rises north of the village of Pembroke and flows northward about 2 miles into Herring Brook (tributary to North River). Abington sheet.

SWAMP POND.—Middlesex County; a small pond near the head of Pines River just north of Malden; inlet, Pines River; outlet, Pines River to Saugus River and thus to Boston Bay; altitude, about 100 feet above sea level; very small. Boston sheet.

SWAN POND.—Barnstable County; town of Dennis; 1 mile north of Dennis Port; outlet, Swan River to Nantucket Sound; three-fourths mile long; one-half mile wide. Yarmouth sheet.

SWAN POND.—Barnstable County; town of Yarmouth; outlet, a stream one-fourth mile long flowing southwestward into Parkers River (tributary to Nantucket Sound). Yarmouth sheet.

SWAN POND.—Essex and Middlesex Counties; 1½ miles northeast of North Reading; outlet, a stream 4 miles long flowing generally eastward into Ipswich River; altitude, about 80 feet above sea level; small. Lawrence and Salem sheets.

SWAN POND RIVER.—Barnstable County; town of Dennis; rises in Swan Pond 1 mile northwest of Dennis Port; flows southwestward 2½ miles into Nantucket Sound; Yarmouth sheet.

SWEET BROOK.—Berkshire County; town of Williamstown; rises a mile southeast of Berlin Mountain; flows southeastward 1 mile, then northeastward 1½ miles into Hemlock Brook (tributary through Hoosic River to the Hudson). Berlin and Greylock sheets.

SWIFT RIVER, EAST BRANCH.—Worcester and Hampshire counties; formed in the town of Petersham by the union of Shattuck and Bigelow brooks. Shattuck Brook, considered the head of the East Branch of the Swift, rises just south of Phillipston and flows southwesterly. Below its junction with Bigelow Brook the stream continues its southwesterly course to the town of Greenwich in Hampshire County where it joins the Middle Branch or head of Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut); length to the head of Shattuck Brook, 20 miles; principal tributaries, Moccasin, Rutland, and Silver brooks; passes through Pottapaug and East ponds. Winchendon, Barre, and Belchertown sheets.

SWIFT RIVER.—Franklin and Hampshire counties; rises near the village of Hawley; flows southerly 9 miles to its junction with Westfield River (tributary to the Connecticut) at Swift River village in the town of Goshen; principal tributaries Stones Brook and North Branch of Swift River. Hawley and Chesterfield sheets.

SWIFT RIVER.—Franklin, Worcester, Hampshire, and Hampden counties; formed in the town of Greenwich by the union of its East and Middle branches. The Middle Branch, considered the continuation of the main stream, rises in North Pond in the town of Orange, and flows southward to the point at which it receives the East Branch. Below that point the general course of the Swift is somewhat west of south to Four Corners, where it joins Ware River (tributary through Chicopee River to the Connecticut); length from North Pond to junction with the Ware, about 30 miles; principal tributary below the mouth of the East Branch is the West Branch, which enters 1½ miles below Enfield; total drainage area above junction with Ware River, 213 square miles. The basin of the Middle Branch contains several large ponds, including, besides North Pond, Spectacle, Hacker, Thompson, and Neseponset ponds. Gaging station at West Ware, 1910–1915. Warwick, Winchendon, Belchertown, Barre, and Palmer sheets. *See also* pages 124–134 of this report.

SWIFT RIVER, MIDDLE BRANCH.—Head of Swift River. *See* Swift River.

SWIFT RIVER, NORTH BRANCH.—Hampshire and Franklin counties; rises on Warner Hill in the town of Plainfield; flows southeasterly 7 miles into Swift River (tributary through Westfield River to the Connecticut) at the village of Swift River. Hawley and Chesterfield sheets.

SWIFT RIVER, WEST BRANCH.—Hampshire and Franklin counties; rises in the town of Wendell in Franklin County; flows east of south 18 miles to Enfield in Hampshire County, where it enters Swift River (tributary through Ware River to Chicopee River and thus to the Connecticut); principal tributaries, Purgee Brook and Cadwell Creek; the basin is narrow and mountainous and the tributaries are short. The map shows only two small ponds in the area. Warwick and Belchertown sheets.

SWIFTS POND.—Plymouth County; town of Wareham; a mile north of Onset; discharges by a stream flowing southward into Onset Bay and thus to Buzzards Bay. Plymouth sheet.

SYKES BROOK.—Berkshire County; a stream about a mile long flowing westward into Housatonic River in the southeastern part of the town of Pittsfield. Becket sheet.

TAMETT BROOK.—Plymouth County; town of Lakeville; a stream about a mile long flowing northeastward into Assawompsett Pond (outlet Namasket River to Taunton River and thus to Narragansett Bay). Middleboro sheet.

TANNER BROOK.—Berkshire County; town of Savoy; rises on the east slope of the Hoosac Range; flows northeastward 2½ miles, then easterly 1½ miles to its junction with Cold River (tributary through Deerfield River to the Connecticut). Greylock and Hawley sheets.

TAPLEY BROOK.—Essex County; rises in Spring Pond, at altitude about 80 feet above sea level; flows northward 1½ miles through a small pond into Goldthwait Brook (tributary to North River and thus to the Atlantic Ocean at Beverly Harbor). Boston Harbor and Salem sheets.

TARKILL BROOK.—Hampden County; town of Agawam; a stream 1½ miles long, flowing southeastward into Threemile Brook (tributary to Connecticut River). Springfield sheet.

TATNUCK BROOK.—Worcester County; rises north of Stone House Hill; flows westward about a mile, thence southeastward through a series of artificial reservoirs to Curtis Pond, at the head of Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); length, 7 miles. Worcester and Webster sheets.

TAUNTON RIVER.—Norfolk, Plymouth, and Bristol counties; formed in the eastern part of the town of Bridgewater by the union of Matfield and Town rivers. Matfield River, which drains the larger area and is considered the continuation of the main stream, rises in the swamp northeast of Stoughton and takes a general southeasterly course to the junction with Town River; below this point the general course of the river is southeasterly and southerly to the head of Narragansett Bay, into which it discharges; length of stream from head of Matfield River (called Salisbury Plain River in its upper course) to Narragansett Bay, including major windings, about 50 miles; principal tributaries below mouth of Town River, Wenatuxet, Namasket, Mill, and Threemile rivers. The Taunton is tidal up to East Taunton, where there is about 2½ feet of rise and fall, and it is navigable to the village of Weir, about a mile south of Taunton. The basin contains a large number of small ponds and swamps, and the run-off through the year is fairly uniform. The average rainfall in the region is about 46 inches. Gaging stations have been maintained on Matfield River at Elmwood, 1909–10, and on Satucket River, a branch of Matfield River, near Elmwood, 1909–10.

Authorities: U. S. Geol. Survey Water-Supply Paper 281, pp. 145–146, 1912; Abington, Dedham, Franklin, Providence, Taunton, Middleboro, New Bedford, and Fall River sheets.

TAYLOR BROOK.—Hampden and Worcester counties; rises on the north slope of Steerage Rock; flows northeastward 2 miles into Tufts Brook, the head of Blodgett Mill Brook (tributary through Quaboag River to Chicopee River and thus to the Connecticut). Brookfield sheet.

TAYLORS POND.—Barnstable County; east of South Chatham; outlet southward through a marsh to Nantucket Sound. Yarmouth sheet.

TENMILE RIVER.—Bristol County; rises 1 mile northeast of North Attleboro; flows southeastward to Attleboro, southwestward to East Providence, R. I., then northwestward through Seekonk River to Providence River and thus to Narragansett Bay; length, 16 miles; principal tributaries, Bungay River, Thatcher Brook, and Sevenmile River. Below Hebronville the course of the river is just west of the Rhode Island boundary. Providence sheet.

THIRD BROOK.—Franklin County; town of Buckland; a stream a mile long, flowing northeastward into Deerfield River (tributary to the Connecticut) a mile east of the mouth of Second Brook. Hawley sheet.

THIRD HERRING BROOK.—Plymouth County; rises in the swamp north of West Scituate in the town of Norwell; flows southeastward 6 miles into North River; principal tributaries, Silver and White Cat brooks. Abington sheet.

THOMPSON BROOK.—Berkshire County; town of New Ashford; a stream 1½ miles long, flowing southeastward into Green River (tributary through Hoosic River to the Hudson) 2 miles north of the village of New Ashford. Greylock sheet.

THOMPSON POND.—Franklin County; town of New Salem; inlets, two small streams from the north; outlet, Middle Branch of Swift River (tributary through Swift River through Ware River and thus through Chicopee River to the Connecticut). Belchertown sheet.

THOMPSONS BROOK.—Bristol County; town of Taunton; rises one-half mile north of Elders Pond; flows northwestward and northward into Taunton River (tributary to Narragansett Bay), 2 miles east of East Taunton; passes through a number of small ponds; length, about 4 miles. Middleboro and Taunton sheets.

THREE CORNERED POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the west-central part of the township. Plymouth sheet.

THREEMILE BROOK.—Hampden County; town of Agawam; rises 2 miles northwest of Agawam Village; flows southeasterly 3 miles into Connecticut River; principal tributaries, Tarkill and Worthington Brooks. Springfield sheet.

THREEMILE POND. -Berkshire County; northeastern part of the town of Sheffield, on Ironworks Brook (tributary to the Housatonic). Sheffield sheet.

THREEMILE RIVER.—Norfolk and Bristol Counties; formed in the town of Norton by the junction of Rumford and Wading Rivers. Wading River, which drains the larger area and is therefore considered the continuation of Threemile River, rises in the town of Foxboro and takes a general southeasterly course to its junction with Rumford River; below this junction Threemile River flows southeastward through North Dighton, where it enters Taunton River (tributary to Narragansett Bay); length to head of Wading River, about 25 miles. Franklin, Dedham, Providence, and Taunton sheets.

THUNDER BROOK.—Berkshire County; town of Cheshire; rises 1 mile south of Rounds Rock; flows southeasterly 1 mile, southerly one-half mile, and easterly one-half mile into Kitchen Brook (tributary through Hoosic River to the Hudson). Berkshire County.

TIASQUAM RIVER.—Dukes County; Marthas Vineyard; rises near the village of Chilmark; flows northeastward to West Tisbury, then southeastward into Tisbury Great Pond through its northern arm. The only stream on the island named on the maps. Gayhead and Marthas Vineyard sheets.

TIHONET POND.—Plymouth County; town of Wareham; inlets, Frog Foot Brook and Wankinco River; outlet, Wankinco River to Wareham River (tributary to Buzzards Bay). Plymouth sheet.

TILLISON BROOK.—Hampden County; rises 1½ miles north of East Granville; flows eastward 2 miles, then southeastward one-half mile to the north base of Sodom Mountain, where it joins Dickinson Brook to form Munn Brook (tributary through Westfield Little River to Westfield River and thus to the Connecticut). Granville sheet.

TILLSON BROOK.—Plymouth County; town of Carver; rises 1½ miles northeast of the village of Carver; flows southward 3½ miles into Sampson Pond (tributary through Sampson Brook to Weweantic River and thus to Buzzards Bay). Plymouth sheet.

TISBURY GREAT POND.—Dukes County; Marthas Vineyard; one of the series of connected ponds on the south shore of the island separated from the ocean by a continuous barrier beach. Tiasquam River enters this pond through its northern arm, which receives also a stream flowing through North Tisbury. The northeastern shore of this pond is characterized by long narrow arms called coves. The width of the pond parallel to the ocean is about a mile. Its greatest length (northwest-southeast) is about 2 miles. Marthas Vineyard sheet.

TISPAQUIN POND.—Plymouth County; town of Middleboro; principal inlet, Shorts Brook (Fall Brook); outlet, Fall Brook to Namasket River (tributary through Taunton River to Narragansett Bay). Middleboro sheet.

TOM NEVERS POND.—Nantucket County; Nantucket Island; back of Tom Nevers Head; 1½ miles southwest of Siasconset. Nantucket sheet.

TOPHET BROOK.—Berkshire County; rises 3 miles northeast of Adams; flows southwesterly 3 miles, then northwesterly 2½ miles to Adams, where it joins Hoosic River (tributary to the Hudson); tributaries, Reed Brook and Anthony Creek. Greylock sheet.

TORREY POND.—Plymouth County; town of Norwell; on Second Herring Brook (tributary to North River). Abington sheet.

TOWER BROOK.—Berkshire County; rises on the east slope of the Hoosac Range, flows northward 1½ miles, then easterly 2 miles into Cold River (tributary through Deerfield River to the Connecticut); many small branches, one of which drains North Pond, one of the few ponds in the basin of the Deerfield in Massachusetts. Greylock sheet.

TOWER BROOK.—Franklin County; a stream about 1½ miles long, flowing southeastward into Deerfield River (tributary to the Connecticut) about a mile above Monroe Bridge. Hawley sheet.

TOWN BROOK.—Plymouth County; town of Plymouth; rises in Little Pond, flows southwestward into Billington Sea, then northeastward into Plymouth Harbor, a branch of Massachusetts Bay; length below Billington Sea, about 2 miles. Plymouth sheet.

TOWN MEADOW BROOK.—Worcester County; town of Leicester. *See* French River.

TOWN RIVER.—Norfolk County; rises on the eastern slope of the Blue Hill Range, in the town of Quincy; flows eastward 2 miles, then northward and northeastward 2½ miles, and again eastward a mile or more to its junction with Weymouth Fore River; a tidal channel in its lower course. Dedham and Boston Bay sheets.

TOWN RIVER.—Norfolk, Bristol, and Plymouth counties; rises in the town of Stoughton; flows southeastward into a swamp of about 7,000 acres, known as the Great Cedar Swamp, and from this natural reservoir passes northeastward thourgh West Bridgewater, then southeastward to its junction with Matfield River (tributary through Taunton River to Narragansett Bay) at Paper Mill village; length, about 18 miles; called Hockomock River, as it enters the swamp and Cowesett Brook in a stretch east of Eastondale; principal tributaries, below the swamp, West Meadow Brook and South Brook. Dedham, Taunton, and Middleboro sheets.

TRAP FALL BROOK.—Middlesex County; rises in the extreme northwestern part of the town of Ashby, at altitude 1,040 feet above sea level; flows southeastward 4 miles into Willard Brook (tributary through Ash Swamp to Squannacook River and thus through Nashua River to the Merrimack. Fitchburg sheet.

TRAPHOLE BROOK.—Norfolk County; rises 1 mile north of Moose Hill in the western part of the town of Sharon; takes a very circuitous but in general northeasterly course and discharges into Neponset River near the upper end of the Great Meadows; length, including major windings, about 4 miles. Dedham sheet.

TRAPPS POND.—Dukes County; Marthas Vineyard; northwest of Edgartown; connected with Sengekontacket Pond. Marthas Vineyard sheet.

TREADWELLS ISLAND CREEK.—Essex County; a tidal creek 1½ miles east of Ipswich, joining Fox Creek and emptying into Ipswich River, opposite Little Neck. Salem sheet.

TRIANGLE POND.—Barnstable County; one of a group of ponds north of the village of Farmersville. Barnstable sheet.

TRIANGLE POND.—Plymouth County; town of Plymouth; one-fourth mile northeast of Great South Pond. Plymouth sheet.

TRIANGLE POND.—Plymouth County; town of Plymouth; 2 miles west of the city of Plymouth. Plymouth sheet.

TRIPHAMMER POND.—Plymouth County; town of Hingham; a small pond on Weir River. Abington sheet.

TRIPLE BROOK.—Hampshire County; town of Southampton; a stream about 2 miles long, flowing northwestward into Manhan River (tributary to the Connecticut) in the southern part of the town of Southampton. Springfield sheet.

TROUT BROOK.—Berkshire and Hampshire counties; head of Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket and Chesterfield sheet.

TROUT BROOK.—Middlesex County; a stream about 2 miles long rising 2 miles south of Townsend Harbor and flowing north and northeast into Squannacook River (tributary through Nashua River to the Merrimack). Groton sheet.

TROUT BROOK.—Middlesex County; rises one-half mile southeast of Burns Hill, and 3 miles northeast of Centralville, at altitude 140 feet above sea level; flows generally southward 2½ miles into Merrimack River; principal tributary, Richardson Brook. Lowell sheet.

TROUT BROOK.—Norfolk County; rises about 1 mile west of Snow Hill at altitude 180 feet above sea level; flows northward 3 miles into Charles River; swampy in lower half of course. Franklin and Framingham sheets.

TROUT BROOK.—Worcester County; rises on the east slope of Barrett Hill, at altitude 860 feet above sea level; flows southeastward about 2½ miles into Quinapoxet River (tributary to Wachusett Reservoir); principal tributary, Governor Brook. Worcester sheet.

TROUT BROOK.—Worcester County; town of Templeton; rises on the south slope of Church Hill; flows southeastward 2 miles, then northward 4 miles into Otter River (tributary through Millers River to the Connecticut); principal tributary, Crow Hill Brook. Near Brooks village it passes through several ponds. Winchendon sheet.

TRULL BROOK.—Middlesex County; about 2 miles southeast of Lowell; at altitude 160 feet above sea level; flows northward 2½ miles into Merrimack River. Lowell sheet.

TUBBS MEADOW BROOK.—*See* Jones River.

TUFTS BRANCH.—Worcester County; town of Dudley; rises about 1½ miles southwest of the village of Tufts; flows irregularly southward about 4 miles to its junction with Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound) near the village of New Boston, Windham County, Conn. Webster sheet.

TUFTS BROOK.—Worcester County; town of Warren; the head of Blodgett Mill Brook (tributary through Quaboag River to Chicopee River and thus to the Connecticut). Brookfield sheet.

TULLY BROOK.—Franklin County; the head of the West Branch of Tully River. *See* Tully River, West Branch. Warwick sheet.

TULLY RIVER, EAST BRANCH.—*See* Tully River.

TULLY RIVER, WEST BRANCH.—Franklin County; rises just south of the New Hampshire-Massachusetts boundary line; flows southeastward 9 miles to its junction with Tully River (tributary through Millers River to the Connecticut at Pinedale, north of Athol). Called Tully Brook above the pond northwest of Tullyville. Warwick and Winchendon sheets.

TULLY RIVER.—Worcester and Franklin counties, Mass., Cheshire County, N. H.; formed north of Athol by the union of its East and West branches. The East Branch, which drains the larger area and is therefore considered the continuation of the main stream, is formed in the northwestern part of the town of Royalston by the union of Fall and Hunting (or Tilly) brooks. Tilly Brook, which thus forms the head of Tully River, rises west of Little Monadnock Mountain, in the town of Richmond, N. H., and flows west of south to its junction with Fall Brook. Below this point the East Branch of Tully River flows southeastward to Long Pond,

thence southward and southwestward to Pinedale, where it receives the West Branch. Below the mouth of the West Branch its course is southward to Millers River (tributary to the Connecticut) at Athol; length to head of Tilly Brook, about 16 miles; principal tributaries, Boyce and Lawrence brooks, and the West Branch. Monadnock, Keene, Winchendon, and Warwick sheets.

TUPPER CREEK.—Barnstable County; town of Sandwich; a tidal channel in the marsh back of Scusset Beach. Plymouth sheet.

TURKEY HILL BROOK.—Worcester County; rises 2 miles northwest of Turkey Hill, flows southeastward through Turkey Hill Pond, thence southwesterly to the town of Spencer, where it unites with Sevenmile River (tributary through East Brookfield River to Quaboag Pond and thus through Quaboag River through Chicopee River and the Connecticut); length, 8 miles; principal tributary, Caruth Brook. Worcester sheet.

TURKEY HILL POND.—Worcester County; at west base of Turkey Hill; outlet, Turkey Hill Brook to Sevenmile River (tributary through East Brookfield River to Quaboag River and thus through Chicopee River to the Connecticut). Worcester sheet.

TURNER POND.—Worcester County; 2 miles southwest of Shirley village; outlet through Bow Brook to stream flowing from Shirley Reservoir to Nashua River (tributary to the Merrimack). Groton sheet.

TURTLE POND.—Barnstable County; town of Yarmouth; a small marshy pond discharging into Bass River (tributary to Nantucket Sound); northeast of South Yarmouth. Yarmouth sheet.

TURTLE POND.—Hampshire County; town of Prescott; a small pond which lies less than one-eighth mile east of the Middle Branch of Swift River, but discharges to that river (which is tributary through Ware River to Chicopee River and thus to the Connecticut) by a stream that flows southwestward more than 3 miles and passes through Warner and Curtis ponds. Belchertown sheet.

TUSSOCK BROOK.—Plymouth County; rises in the southern part of the town of Duxbury; flows southward into Hall Brook (tributary through Jones River to Kingston Bay, a branch of Massachusetts Bay); length, about a mile. Duxbury sheet.

TUTTLE BROOK.—Hampshire County; rises in the southeastern part of the town of Peru in Berkshire County; flows southeastward 5 miles into Middle Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket and Chesterfield sheets.

TWELVEMILE BROOK.—Hampden County; rises in the town of Monson, on the north slope of Moon Mountain; flows northerly 3 miles, then northwesterly 3 miles into Chicopee River (tributary to the Connecticut) near Butlerville. Palmer sheet.

TYNGS POND.—Middlesex County; 2½ miles northwest of Lowell; about three-fourths mile long and one-half mile in maximum width; outlet, a steam about 1 mile long flowing northwestward into Lawrence Brook (tributary to the Merrimack). Lowell sheet.

UNCAS POND.—Norfolk County; about 1½ miles southeast of Franklin; inlet, a stream 2 miles long flowing northward and then south of east into Whiting Pond (tributary to Charles River). Franklin sheet.

UNCHECHEWHATON POND.—Worcester County; 2½ miles northwest of Shirley Reservoir; altitude, about 510 feet above sea level; two outlets, one a stream flowing eastward about 1 mile into Catacoonamug Brook (tributary through Shirley Reservoir to Nashua River, and thus to the Merrimack), the other a stream about 4 miles long flowing from the south end, encircling the base of Nichols Hill, and passing through Massapoag Pond to its junction with Catacoonamug Brook; about one-half mile long; maximum width, one-half mile. Groton sheet.

UNKAMET BROOK.—Berkshire County; rises on Oak Hill in the town of Pittsfield; flows southerly and southeasterly into Housatonic River; 2½ miles long. Becket sheet.

UNKETY BROOK.—Middlesex County; rises 1 mile west of East Groton Station; flows west of north 4½ miles into Nashua River (tributary to the Merrimack); swampy throughout most of its course. Groton sheet.

UNQUOMONK BROOK.—Hampshire County; town of Williamsburg; rises on the south slope of Petticoat Hill; flows southeastward 2 miles, northeastward 1 mile, and eastward one-half mile into Mill River (tributary to the Connecticut) about a mile southeast of the city of Williamsburg. Used by Williamsburg as a source of municipal supply. Chesterfield and Northampton sheets.

UPPER GATE POND.—Barnstable County; 1½ miles north of Hyannis, immediately west of Halfway Pond; very small. Barnstable sheet.

UPPER GOOSE POND. *See* Goose Pond, Upper.

UPPER POND.—Hampshire County; near the east end of the Holyoke Range; outlet, Bachelor Brook, which flows through Middle and Lower ponds, and Forge Pond. and into Connecticut River. Belchertown sheet.

UPPER RESERVOIR.—Worcester County; town of Paxton; on west slope of Little Asnebumskit Hill; natural outlet, Kettle Brook to Blackstone River, and thus through Seekonk and Providence rivers to Narragansett Bay; used as a part of the water supply system of Worcester. Worcester sheet.

VALLEY BROOK.—Hampden County; rises in the northern part of the town of Granville; flows somewhat west of south 6 miles and unites with the East Branch of Farmington River (tributary through Farmington River to the Connecticut) in the northern part of the town of Hartland in Hartford County, Conn.; length above Massachusetts State line, 5 miles. Granville sheet.

VARNUM BROOK.—Middlesex County; a stream about 1½ miles long flowing southeastward into Nashua River (tributary to the Merrimack) at East Pepperell. Groton sheet.

VENTURERS POND.—Hampshire County; a small pond 3 miles east of Springfield; about halfway between the North and South branches of Mill River (tributary to the Connecticut). Springfield sheet.

VINE BROOK.—Middlesex County; rises in a small pond southwest of Loring Hill, 1 mile southwest of Lexington, at altitude about 240 feet above sea level; flows northeast 2 miles through the town of Lexington, northward 2 miles passing through several ponds, then northwestward 2 miles into Shawsheen River (tributary to the Merrimack) 1½ miles northeast of Bedford; marshy through much of its course. Boston, Lowell, and Lawrence sheets.

WABAN POND.—Norfolk County; 1½ miles east of Natick; inlet, a stream from Morses Pond; outlet, a stream one-half mile long flowing southward from the east end of the lake into Charles River. Framingham sheet.

WACHUSETT BROOK, EAST.—Worcester County; rises on the south slope of Wachusett Mountain, at altitude about 1,320 feet above sea level; flows southeastward to its junction with Stillwater River (tributary to Wachusett Reservoir), near West Sterling; length, about 5 miles; principal tributary, Babcock Brook. Worcester sheet.

WACHUSETT BROOK, SOUTH.—Rises in Worcester County in the town of Princeton, on the southwest slope of Wachusett Mountain, at altitude about 1,100 feet above sea level; flows southwestward 2 miles, then southeastward 4 miles into Quinapoxet Pond; outlet, Quinapoxet River (tributary to Wachusett Reservoir). Worcester sheet.

WACHUSETT POND.—Worcester County; town of Princeton; north slope of Wachusett Mountain; several small inflowing streams; outlet to Grass Pond, which discharges through Whitman River into North Branch of Nashua River (tributary through Nashua River to the Merrimack); altitude, 870 feet above sea level; length, about three-fourths mile; maximum width, three-eighths mile. Fitchburg sheet.

WACHUSETT RESERVOIR.—Worcester County; on South Branch of Nashua River between Clinton and Oakdale; watershed tributary to reservoir, 108.84 square miles, area of water surface in reservoir at high water, 6.48 square miles; capacity; 64,968,000,000 gallons at high water; elevation, 395 feet; water stored since 1903; forms part of the water supply system of Boston and vicinity. Maps of metropolitan water district. *See also* page 283 of this report.

WADING RIVER.—Norfolk and Bristol counties; head of Threemile River. *See* Threemile River.

WAKEBY POND. *See* Mashpee Pond.

WALDEN LAKE.—Middlesex County; about 1 mile south of Concord and just east of Fairhaven Hill; 1½ miles east of Sudbury River (tributary through Concord River to the Merrimack); altitude, about 160 feet above sea level; about one-half mile long and one-fourth mile wide. Framingham sheet.

WALDEN POND.—Essex County; a reservoir constructed for the water supply of Lynn; about one-half mile east of North Saugus on the south slope of Mount Paran; inlet, Penny Brook; outlet, Penny Brook to Hawkes Brook, and thus to Saugus River, which discharges into Boston Bay; length, 1 mile; maximum width, one-half mile; east end of Walden Pond is called Glen Lewis Pond and lies on the south slope of Mount Lebanon and Mount Spicket; length of Glen Lewis Pond, about one-half mile; narrow. Map in report of Massachusetts State Board of Health.

WALES BROOK.—Hampden County; town of Wales; rises about a mile southeast of Wales Pond; flows northwestward through the pond to the village of Wales, thence northeastward and northward about 5 miles to its junction with Mill Brook (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Brookfield sheet.

WALES POND.—Hampden County; town of Wales; south of the village of Wales; outlet, Wales Brook to Mill Brook (tributary through Quinebaug River to Shetucket River and thus through Thames River to Long Island Sound). Brookfield sheet.

WALKER BROOK.—Berkshire and Hampden counties; rises in the town of Becket 1½ miles west of Becket Center; flows southeastward 3 miles, then in general northeastward 6 miles to Chester, where it enters West Branch of Westfield River (tributary through Westfield River to the Connecticut). Becket, Sandisfield, and Chesterfield sheets.

WALKER BROOK.—Hillsboro County, N. H., Middlesex County, Mass.; rises in the southwestern part of the town of Mason in Hillsboro County, N. H., at altitude about 920 feet above sea level; flows southeastward about 5 miles into Ash Swamp which is drained through Squannacook River to Nashua River and thus to the Merrimack. Fitchburg sheet.

WALKER POND.—Worcester County; three-fourths mile southeast of Walker Mountain; outlet, Hobbs Brook to Quinebaug River (tributary through Shetucket River to Thames River and thus to Long Island Sound). Brookfield sheet.

WALKERS POND.—Barnstable County; town of Harwich; 2 miles north of South Harwich. Yarmouth sheet.

WALL POND.—Plymouth County; town of Plymouth; three-fourths mile northeast of White Island Pond. Plymouth sheet.

WALLUM POND.—Worcester County, Mass., and Providence County, R. I.; outlet, Branch River to Blackstone River (tributary to Seekonk River and thus through Providence River to Narragansett Bay); about 2 miles long and one-fourth mile wide. Webster sheet.

WANKINCO RIVER.—Plymouth County; rises in East Head Pond; flows west of south through Tihonet Pond and the pond south of the village of Tihonet into Wareham River (tributary to Buzzards Bay) at Wareham Center. East Head Pond is on the boundary between the towns of Carver and Plymouth and the river forms part of that boundary north of the Wareham line. Plymouth sheet.

WANPENUM BROOK.—Berkshire County; rises on the west slope of South Mountain south of Pittsfield; flows northwestward 1 mile, southeasterly 1½ miles to Melville Lake, then northeastward one-half mile to Housatonic River. Pittsfield and Becket sheets.

WARD POND.—Berkshire County; 1½ miles northeast of North Otis; on the head of Farmington River (tributary to the Connecticut). Sandisfield sheet.

WARD POND.—Worcester County; 1 mile southeast of Watatic Mountain, on Souhegan River (tributary to Merrimack River); altitude about 1,090 feet above sea level; area, 56 acres. Fitchburg sheet.

WARDS STREAM.—Hampshire County; town of Worthington; head of Little River (tributary to the Connecticut). Chesterfield sheet.

WAREHAM RIVER.—Plymouth County; a tidal channel extending from Buzzards Bay northward into the town of Wareham; principal tributaries, Wankinco River and Agawam River. Plymouth and Falmouth sheets.

WARE RIVER.—Head of Chicopee River. *See* Chicopee River.

WARNER POND.—Hampshire County; town of Prescott; inlet from Turtle Pond; outlet through Curtis Pond to the Middle Branch or head of Swift River (tributary through Ware River to the Chicopee and thus to the Connecticut). Belchertown sheet.

WARREN BROOK.—Worcester County; rises 3 miles north of Upton; flows west of south 4 miles into West River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay) at West Upton. Blackstone sheet.

WARREN RESERVOIR.—Bristol County; town of Swansea; 2 miles west of Swansea Factory; outlet, Kickamuit River to Mount Hope Bay and thus to Narragansett Bay. Taunton sheet.

WARREN RIVER.—Bristol County, Mass., and Bristol County, R. I.; rises south of North Rehoboth; flows very irregularly southwestward into Narragansett Bay east of Rumstick Neck; called Palmer River above Harris; length to head of Palmer River, about 18 miles; tidal in its lower course; principal tributaries, Bad Luck, Bliss, Carpenters, and Clear Run brooks, and Rocky Run. Taunton, Providence, and Narragansett Bay sheets.

WASH BROOK.—Middlesex County; formed by the junction of Hop and Landham brooks on the south slope of Green Hill, 2 miles north of Saxonville, at altitude about 120 feet above sea level; flows generally eastward 2 miles through a swampy area into Sudbury River (tributary through Concord River to the Merrimack). Framingham sheet.

WASHING POND.—Nantucket County; Nantucket Island; north of Maxey Pond and one-fourth mile south of Nantucket Sound; small. Nantucket sheet.

WASHINGTON MOUNTAIN BROOK.—Berkshire County; rises a mile northwest of Becket Mountain; flows northwestward 3 miles, then southwestward 2½ miles to its junction with Housatonic River about 1½ miles north of Lee. Becket sheet.

WATATIC POND.—Worcester County; 1 mile southeast of Watatic Mountain and one-fourth mile northeast of Ward Pond with which it is connected by Souhegan River; area, 28 acres; outlet, Souhegan River to Merrimack River. Fitchburg sheet.

WATCHA POND.—Dukes County; Marthas Vineyard; one of a series of ponds on the south shore of the island, separated from the ocean by a continuous barrier beach; about halfway between Tisbury Great Pond and Edgartown Great Pond. Marthas Vineyard sheet.

WATERS RIVER.—Essex County; a tidal estuary 1½ miles northwest of Salem; length 1½ miles to Danvers River (which joins the Atlantic at Beverly Harbor). Salem sheet.

Watsons Pond.—Bristol County; town of Taunton; outlet, a short stream flowing eastward into Scudding Pond on Mill River (tributary through Taunton River to Narragansett Bay). Taunton sheet.

Wattle Pond.—Middlesex County; a small pond a mile south of East Pepperell; natural outlet a stream a mile long flowing north to Reedy Meadow Brook (tributary through Nashua River to the Merrimack) at East Pepperell. Groton sheet.

Watts Stream.—Hampshire County; town of Worthington; rises 1½ miles northwest of Worthington Center; flows southeasterly 4 miles to Ringville, where it joins Wards Stream to form Little River (tributary through Westfield River to the Connecticut). Chesterfield sheet.

Watuppa ponds, North and South.—Bristol County; town of Fall River; the North Pond is fed by 10 small streams, none of which are named on the topographic sheet. The drainage basin tributary to the South Pond contains three ponds on the south and west in addition to Stafford, Sawdy (Sandy on the map), and Devol ponds. Area of North Pond at "full pond," 2.821 square miles; average depth, 12.24 feet; greatest depth, 26 feet. Area of South Pond, 2.423 square miles. Water of North Pond is used for municipal supply of Fall River, but by far the largest part of the water drawn from the ponds is used by the mills below the Troy dam for power development and mechanical purposes. Fall River sheet. A detailed description of the basin of Watuppa ponds and of the use of the water at Fall River is contained in the report of the reservoir commission to the city council of Fall River, dated July 10, 1902.

Waushacum ponds, East and West.—Worcester County; about 3 miles west of Clinton, just north of Wachusett Reservoir. The ponds are connected by a stream one-half mile long. West Waushaccum Pond receives a stream about 3 miles long; outlet, a stream about 2 miles long, which is called Waushacum Brook and which flows into the upper end of Wachusett Reservoir near the mouth of Stillwater River. Worcester and Marlboro sheets and maps of Metropolitan Water District.

Webb Brook.—Middlesex County; rises about one-half mile southeast of Billerica, at altitude about 180 feet above sea level; flows southeastward 1 mile, then generally eastward 1 mile into Shawsheen River (tributary to Merrimack River); marshy near mouth. Lowell and Lawrence sheets.

Wedge Pond.—Middlesex County; just west of Winchester; connected by a very small stream with another small pond on Aberjona River, and thus finds outlet through Mystic lakes to Mystic River, which discharges into Boston Bay. Boston sheet.

Weeks Pond.—Barnstable County; town of Sandwich; west of Snake Pond and 1 mile west of Forest Dale. Falmouth sheet.

Weir River.—Plymouth County; rises in Accord Pond near the village of Queen Anne Corners; takes an irregular but in general northerly course and discharges into Hingham Bay; length from White Head to Accord Pond, about 10 miles; principal tributary, stream from Cushing Pond. Abington and Boston Bay sheets.

Wekepeke Brook.—Worcester County; rises on the west slope of Rocky Hill, at altitude about 750 feet above sea level; flows southeastward about 3½ miles, then northeastward 2½ miles into North Branch of Nashua River (tributary through Nashua River to the Merrimack). Worcester and Marlboro sheets.

Wells Creek.—Barnstable County; a tidal channel in the marsh northwest of Barnstable Harbor. Barnstable sheet.

Wenatuxet River.—Plymouth County; rises in the town of Carver; flows northwestward to its junction with Taunton River (tributary to Narragansett Bay); length to head of Stony Brook, here considered the head of the river, 9 miles; principal tributaries, Green, Annasnappet, Colchester, Raven, and Bartlett brooks. Middleboro sheet.

WENHAM LAKE.—Essex County; south of Wenham and about one-half mile south of Wenham Swamp; inlet, a small stream from the west; outlet, a small stream to Miles River (tributary to Ipswich River); length, 1½ miles; maximum width, one-half mile. Salem sheet.

WENHAM POND.—Plymouth County; town of Carver; north of the village of Wenham; outlet, Herring Brook to South Meadow Brook (head of Weweantic River, which is tributary to Buzzards Bay). Middleboro sheet.

WENUCHUS LAKE.—Essex County; on the north side of the city of Lynn; inlet, a stream from Wyoma Lake; outlet, a tributary of Saugus River forming part of the drainage system of the city of Lynn; length, about one-half mile; maximum width, about one-fourth mile. Boston Harbor sheet.

WEST BRANCH.—Hampshire County; rises in the western part of the town of Cummington; flows southeastward to West Chesterfield, where it joins Westfield River (tributary to the Connecticut); length, 7 miles; called Bronson Brook above the mouth of Steven Brook. Chesterfield sheet.

WEST BROOK.—Franklin County; rises (as Avery Brook) in the town of Conway; flows southeastward 8 miles into Mill River (tributary to the Connecticut) at Westbrook village. Northampton sheet.

WEST BROOK.—Franklin and Worcester counties; rises on the north slope of Beach Hill, in the town of Orange; flows southeasterly to its junction with Millers River (tributary to the Connecticut), 1½ miles southwest of Athol, in Worcester County; length, 7 miles; principal tributary, Chene Brook. Warwick sheet.

WEST BROOK.—Hampden County; rises on the west slope of Mount Vision in the Wilbraham mountains; flows southward 2 miles into Scantic Brook (tributary through Scantic River to the Connecticut) at Hampden. Palmer sheet.

WEST BROOK.—Hampden County; town of Brimfield; a stream about 2½ miles long flowing southward into Mill Brook (tributary to Quinebaug River, and thus through Shetucket and Thames rivers to Long Island Sound) near the village of Brimfield. Brookfield sheet.

WESTFIELD BROOK.—Berkshire County; rises one-half mile east of Windsor village; flows southward 1½ miles, then very irregularly eastward to Cummington in Hampshire County, where it joins Westfield River (tributary to the Connecticut). Becket and Chesterfield sheets.

WESTFIELD LITTLE RIVER.—Hampden County; formed in the town of Russell by the union of Pebble and Borden brooks. Pebble Brook, the continuation of the main stream, rises in Blandford and flows southeasterly; below the mouth of Borden Brook Westfield Little River continues its southeasterly course to a point a mile southeast of Cobble Mountain, where it turns and flows northeastward 2 miles; it turns again abruptly and flows southeasterly to Westfield, where it unites with Westfield River (tributary to the Connecticut). Gaging station 3 miles below confluence of Pebble and Borden brooks, at diversion dam of the Springfield Water Works. Used as a source of water supply for the city of Springfield. *See* pages 167–176 of this report. Sandisfield, Granville, and Springfield sheets.

WESTFIELD RIVER.—Berkshire, Franklin, Hampshire, and Hampden counties; rises near Savoy Center, in the town of Savoy, about 2,300 feet above sea level; flows southeasterly to the village of Swift River, thence southerly to Huntington, then again southeasterly to its confluence with the Connecticut at Springfield; length from source to mouth, 55 miles; drainage area, 515 square miles; principal tributaries, Swift River, Middle and West branches of the Westfield, and Westfield Little River. The basin is hilly and toward the headwaters mountainous; storage reservoirs neither numerous nor large; fluctuations in discharge rapid. Gaging stations at Knightville and Westfield on the main stream; at Goss Heights on the Middle Branch; and at Chester on the West Branch. Maps of basin: Greylock, Hawley, Becket, Chesterfield, Granville, and Springfield sheets. *See* pages 150–181 of this report.

WESTFIELD RIVER, MIDDLE BRANCH.—Berkshire and Hampshire counties; rises (as Trout Brook) in the northern part of the town of Peru; flows southeasterly through the towns of Middlefield, Worthington, and Chester to its junction with Westfield River (tributary to the Connecticut); length, about 19 miles; drainage area, 53 square miles; at the head of the stream the altitude is about 2,200 feet above sea level; where it joins the main stream the elevation is 410 feet; principal tributaries, Fuller Brook, Tuttle Brook, Den Stream, and Kinney and Day brooks. Becket and Chesterfield sheets.

WESTFIELD RIVER, WEST BRANCH.—Berkshire and Hampshire counties; rises in the town of Washington, 1,900 feet above sea level; flows southeasterly 22 miles through Becket and Chester to Huntington, where it joins Westfield River (tributary to the Connecticut); drainage area, 96 square miles; altitude of junction, about 370 feet; principal tributaries, Factory, Walker, Sanderson, and Roaring brooks. The basin contains a number of small ponds and reservoirs. Becket, Sandisfield, Chesterfield, and Granville sheets.

WEST HOLLOW BROOK.—Franklin County; town of Leyden; rises in Windham County, Vt., in the southwestern part of Guilford; flows southwestward 2½ miles into Green River (tributary through Deerfield River to the Connecticut). Greenfield sheet.

WEST MEADOW BROOK.—Plymouth County; rises in the town of Brockton near Brockton Heights; flows in general somewhat east of south to its junction with Town River (tributary through Matfield River to Taunton River and thus to Narragansett Bay) in West Bridgewater. The headwater stream is called Black Betty Brook; length to head of Black Betty Brook, 5 miles. Dedham sheet.

WEST POND.—Plymouth County; town of Plymouth; the largest of a group of small ponds lying southwest of Billington Sea. Plymouth sheet.

WEST POND.—Worcester County; 2 miles north of Hudson; altitude 340 feet above sea level; outlet, a small stream flowing northward into a much larger stream (tributary to Assabet Brook and thus through Assabet and Concord rivers to the Merrimack). Marlboro sheet.

WESTPORT RIVER.—A tidal channel connecting Westport Harbor with the ocean west of Buzzards Bay. The East Branch of Westport River, the principal stream discharging through this channel, heads in the town of Freetown and flows southwestward to the ponds above Westport Mills; in this part of its course it is called Shingle Island River; below Westport Mills the general course of the river is southward to Westport Point, then westward to Westport Harbor, where it receives the West Branch; length, 20 miles. Fall River sheet.

WESTPORT RIVER, EAST BRANCH. *See* Westport River.

WESTPORT RIVER, WEST BRANCH.—Newport County, R. I., and Bristol County, Mass.; rises near Bliss Corner in the town of Tiverton, R. I.; flows southeastward to Westport Harbor, where it joins the East Branch of Westport River and passes to the ocean; tidal to Adamsville, R. I.; length above tidewater, about 5 miles. Fall River sheet.

WEST RIVER.—Worcester County; rises 2 miles northeast of Grafton; flows southward to Silver Lake, southeastward to the north base of West Hill, thence southwestward into Blackstone River (tributary through Seekonk River to Providence River and thus to Narragansett Bay); length, 12 miles; principal tributaries, Warren, Center, Rock Meadow, and Meadow brook; called Miscoe Brook above Silver Lake. Blackstone sheet.

WEST WACHUSETT BROOK.—Worcester County; rises on the northwest slope of Little Wachusett Mountain; flows northwestward 2 miles to the reservoir in Westminster; thence southwestward 1 mile into Ware River (tributary through Chicopee River to the Connecticut). Worcester sheet.

WEWEANTIC RIVER.—Plymouth County; rises in the extreme northern part of Carver; flows very irregularly southward into Buzzards Bay; called South Meadow Brook above junction with Beaver Dam Brook; length to head of South Meadow Brook, about 20 miles; principal tributaries below South Meadow Brook, Beaver Dam, Rocky, Meadow, Double and Sampson brooks, and Sippican River; tidal in its lower course. Plymouth, Middleboro, New Bedford, and Falmouth sheets.

WEWEEDER PONDS.—Nantucket County; Nantucket Island; two small ponds a mile east of the southern end of Miacomet Pond; one of the numerous small ponds on the south shore of the island, separated from the ocean by a narrow barrier beach. Nantucket sheet.

WEYMOUTH BACK RIVER.—Norfolk County; rises in the swamp northeast of West Abington, and flows northwestward through Great Pond, thence northward and northeastward (as Mill River) into Whitman Pond, then in general northward into Hingham Bay; principal tributary, Old Swamp River, which discharges into Whitman Pond; length from Weymouth to head near West Abington, about 10 miles; tidal to East Weymouth. Abington and Boston Bay sheets.

WEYMOUTH FORE RIVER.—Norfolk County; rises on Great Blue Hill in a small pond about 400 feet above sea level; flows irregularly eastward and southeastward about 6 miles, then in a general northeasterly course into Hingham Bay; lower course tidal; length from Ferry Point to source, about 13 miles; principal tributaries, a stream which drains the southeastern part of the town of Randolph and the western part of Holbrook, streams from Great and Little ponds, Haywood and Ruggles creeks, and Town River. Dedham, Abington, and Boston Bay sheets.

WHATCHAUG BROOK.—Hampden County; rises on the west slope of the Wilbraham Mountains; flows southwestward 3 miles to the southeastern part of the town of Long Meadow, then southeastward 2½ miles to North Somers, Conn., where it joins Scantic Brook to form Scantic River (tributary to the Connecticut); length north of the Massachusetts line, about 4 miles. Palmer sheet.

WHEELER BROOK.—Berkshire County; a stream about a mile long, flowing southeastward into Huntersfield Brook (tributary through North Branch of Hoosic River to Hoosic River and thus to the Hudson) at North Adams. Greylock sheet.

WHEELER BROOK.—Berkshire County; town of Florida; a stream 1 mile long flowing southeastward into Cold River (tributary through Deerfield River to the Connecticut) 2½ miles west of its mouth. Hawley sheet.

WHEELER BROOK.—Hampden County; town of Blandford; a stream about a mile long flowing easterly into Pebble Brook and thus to Springfield reservoir on Westfield Little River. *See* Westfield Little River. Granville sheet.

WHETSTONE BROOK.—Franklin County; town of Wendell; rises 1½ miles southeast of the village of Wendell; flows in general east of north to its junction with Millers River (tributary to the Connecticut) near Wendell Depot; about 4 miles long. Warwick sheet.

WHITCOMB BROOK.—Berkshire County; town of Florida; rises near the village of Florida; flows southeastward 2½ miles into Deerfield River (tributary to the Connecticut) at Hoosac Tunnel. Greylock and Hawley sheets.

WHITE BROOK.—Hampden County; town of Agawam; a stream less than a mile long flowing northward into Westfield River (tributary to the Connecticut). Springfield sheet.

WHITE ISLAND POND.—Plymouth County; towns of Plymouth and Wareham; outlet, Red Brook to Buttermilk Bay and thus to Buzzards Bay; a large pond of very irregular outline. Plymouth sheet.

WHITE LILY POND.—Berkshire County; 2 miles north of Benton Lake in the town of Otis, to which it discharges by a southward flowing stream and through which it is tributary to Otis reservoir, Farmington River, and the Connecticut. Sandisfield sheet.

WHITEMANS BROOK.—Worcester County; a stream about half a mile long, flowing northward from the east slope of Mount Hunger into Stodgemeadow Pond. Fitchburg sheet.

WHITE POND.—Barnstable County; 1 mile northwest of North Harwich. Yarmouth sheet.

WHITE POND.—Middlesex County; 2½ miles east of Maynard, and 1½ miles south of Westvale; altitude, about 160 feet above sea level; about 1½ miles east of Sudbury River (tributary through Concord River to the Merrimack); very small. Framingham sheet.

WHITE POND.—Middlesex County; 3 miles southwest of Maynard and 2 miles south of Assabet River (tributary through Concord River to the Merrimack). Framingham sheet.

WHITE POND.—Worcester County; town of Athol; 1½ miles north of South Athol; inlet, Ellinwood Brook; outlet, a stream one-half mile long flowing westward into the reservoir on the Worcester-Franklin county line south of Eaglesville. The overflow from this reservoir passes northward to Millers River (tributary to the Connecticut). Warwick sheet.

WHITE POND.—Worcester County; town of Lancaster; discharges by a stream about three-fourths mile long, flowing westward into North Branch of Nashua River (tributary through Nashua River to the Merrimack). Groton sheet.

WHITES POND.—Plymouth County; town of Plymouth; one of a group of small ponds in the southeastern part of the township between White Island Pond and Great Herring Pond. Plymouth sheet.

WHITING POND.—Norfolk County; 1 mile west of Wrentham; several small inflowing streams; outlet, a stream 5 miles long flowing in general northward into Charles River; altitude, about 200 feet above sea level. Franklin sheet.

WHITING RIVER.—Berkshire County, Mass.; Litchfield County, Conn.; rises in the town of New Marlboro; flows southwesterly to East Canaan village in the town of North Canaan, Conn., where it joins Blackberry River (tributary to the Housatonic); length, about 9 miles, of which 6 miles is north of the Massachusetts-Connecticut boundary. Sandisfield and Sheffield sheets.

WHITINS POND.—Worcester County; a large pond on Mumford River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay) west of Whitinsville. In addition to Mumford River the pond receives Purgatory Brook and several smaller streams. Blackstone sheet.

WHITMAN POND.—Norfolk County; near East Weymouth; principal inflowing stream, Mill River (considered head of Weymouth Back River) and Old Swamp River; outlet, Weymouth Back River; altitude, about 60 feet above sea level. Abington sheet.

WHITMARSH BROOK.—Hampshire County; town of Cummington; a stream 2 miles long flowing southeastward into Bronson Brook, the head of West Branch (tributary through Westfield River to the Connecticut). Chesterfield sheet.

WHITNEY POND.—Worcester County; at Winchendon; on Millers River (tributary to Connecticut River); principal inlet, in addition to Millers River, stream from Lake Monomonac. Winchendon sheet.

WHORTLEBERRY POND.—Norfolk County; town of Weymouth; west of south end of Whitman Pond; outlet, a stream one-fourth mile long flowing westward into Mill River (Weymouth Back River). Abington sheet.

WICKABOAG POND.—Worcester County; west of West Brookfield in the town of West Brookfield; inlet, Mill Brook; outlet, Mill Brook to Quaboag River (tributary through Chicopee River to the Connecticut). The pond is nearly 2 miles long and one-half mile in maximum width, and the stream connecting it with the Quaboag is about one-eighth mile long. Barre and Brookfield sheets.

WICKETT BROOK.—Franklin County; town of Wendell; rises in Wickett Pond; flows northwestward into Millers River (tributary to the Connecticut); length, 3 miles. Warwick sheet.

WICKETT POND.—Franklin County; town of Wendell; outlet, Wickett Brook to Millers River (tributary to the Connecticut); nearly a mile long; about one-eighth mile wide. Warwick sheet.

WIGGINS POND.—Plymouth County; town of Plymouth; 1 mile southwest of Great South Pond. Plymouth sheet.

WIGHT POND.—Norfolk County; northern part of town of Dedham; one inlet; outlet, a stream about 2 miles long flowing east and north into Charles River in Dedham; very small. Dedham sheet.

WIGWAM BROOK.—Worcester County; rises in a pond north of Wigwam Hill; flows northwestward into Meadow Brook (tributary through West River to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay); 1½ miles long. Blackstone sheet.

WIGWAM POND.—Nantucket County; Nantucket Island; south shore; separated from the ocean by a narrow beach. Nantucket sheet.

WIGWAM POND.—Norfolk County; town of Dedham; one inlet from Little Wigwam Pond; outlet, a stream flowing northward to the stream connecting Wight Pond with Charles River at Dedham. Dedham sheet.

WILD CAT BROOK.—Plymouth County; rises in the town of Norwell near Burnt Plain Swamp; flows in general southward to its junction with Third Herring Brook (tributary to North River); length, 3 miles. Abington sheet.

WILDER BROOK.—Worcester County; rises 1½ miles southwest of North Ashburnham station; flows southwestward 3 miles into a pond on Kneeland Brook (tributary through Otter River to Millers River and thus to the Connecticut). Fitchburg and Winchdon sheets.

WILDER RIVER.—Franklin County; rises 1 mile north of Pocumtuck Mountain; flows southerly 3½ miles into Deerfield River (tributary to the Connecticut) near East Charlemont. Hawley sheet.

WILLARD BROOK.—Berkshire County; rises in the western part of the town of Sheffield; flows east of north 3½ miles to Hubbard Brook (tributary through Schenob Brook to Housatonic River); principal tributaries, streams from Spur Lake and Harman Marsh Pond. Sheffield sheet.

WILLARD BROOK.—Middlesex County; rises in the town of Ashby, in the reservoir 2 miles southwest of Mill Village; flows in general north of east to the lower end of Ash Swamp which is drained through Squannacook River to Nashua River and thus to the Merrimack; principal tributary, Trap Fall Brook; length, about 6 miles. Fitchburg sheet.

WILLIAMS POND.—Middlesex County; just west of Marlboro; altitude about 420 feet above sea level; outlet, Millham Brook (tributary through Assabet River to Concord River and thus to the Merrimack); about one-fourth mile long and one-half mile in maximum width. Marlboro sheet.

WILLIAMS RIVER.—Berkshire County; rises in Shaker Mill Pond, in the northern part of the town of West Stockbridge; this pond receives three large streams—Cone, Griffin, and Flat brooks. Flat Brook, which drains the largest area and is therefore considered the continuation of Williams River, rises in the eastern part of the town of Canaan in Columbia County, N. Y.; flows west of south 2½ miles, then southeasterly about 4 miles to Shaker Mill Pond, crossing the New York-Massachusetts boundary at State line; from Shaker Mill Pond, Williams River flows southward 9 miles to Van Dausenville in Great Barrington, where it enters Housatonic River. The river has no important tributaries below Shaker Mill Pond. Pittsfield and Sheffield sheets.

WILLIS POND.—Middlesex County; in a swamp 2 miles south of Maynard; inlet Run Brook; outlet, Run Brook to Hop Brook (tributary through Wash Brook to Sudbury River and thus through Concord River to the Merrimack); altitude, 180 feet above sea level; small. Framingham sheet.

WILLIS POND RESERVOIR.—Worcester County; 2 miles south of the village of Manchaug; three inflowing streams, including one from Bad Luck Pond (north of Wadkin Hill); outlet, a stream 2 miles long flowing northeastward into Mumford River (tributary to Blackstone River and thus through Seekonk and Providence rivers to Narragansett Bay). Webster sheet.

WILLOW BROOK.—Middlesex County; rises about 1 mile north of Woburn, at altitude 100 feet above sea level; flows generally northeastward about 1½ miles into Mystic River (which discharges into Boston Bay) a short distance above Richardson Pond. Lawrence sheet.

WILLS BROOK.—Middlesex County; rises 2 miles southeast of North Reading, at altitude 120 feet above sea level; flows somewhat southwestward 1 mile into Ipswich River. Lawrence sheet.

WILSON BROOK.—Franklin County; town of Warwick; a stream about 2 miles long, flowing southeastward into Moss Brook (tributary through Millers River to the Connecticut) just below the outlet of Lake Moore. Warwick sheet.

WINCHESTER RESERVOIRS.—Middlesex County; about half a mile east of Winchester; part of the water storage system of Winchester and vicinity. Boston sheet.

WINDSOR POND.—Berkshire County; northeastern part of the town of Windsor, inlet from Crooked Pond; outlet, a stream 2 miles long flowing westward and southward into Westfield River (tributary to the Connecticut). Hawley sheet.

WINE BROOK.—Worcester County; town of Phillipston; a stream 2 miles long flowing northward into Burnshirt River (tributary through Ware River to Chicopee River and thus to the Connecticut) at the lower end of the swamp east of East Phillipston. Winchendon sheet.

WINIMUSSET BROOK.—Worcester County; town of New Braintree; a stream 2 miles long flowing northward into Ware River (tributary through Chicopee River to the Connecticut). Barre sheet.

WINNECONNET POND.—Bristol County; 4 miles northwest of the city of Taunton; inlets, Canoe River (head of Mill River) and Mulberry Meadow Brook; outlet, Mill River to Taunton River (tributary to Narragansett Bay); pond is nearly a mile long and half a mile wide. Taunton sheet.

WINNINGS POND.—Middlesex County; a very small pond 1½ miles southwest of Billerica; altitude, 180 feet above sea level; outlet, a small stream one-half mile long flowing eastward into Concord River (tributary to the Merrimack). Lowell sheet.

WINNS BROOK.—Middlesex County; rises near the village of Belmont, about a mile south of Arlington Heights, at altitude about 200 feet above sea level; flows generally eastward about 1½ miles into Little Pond (tributary through Little River to Alewife Brook and thus to Mystic River). Boston sheet.

WINTER POND.—Middlesex County, a small pond on the west edge of Winchester; lies in the divide very near one of the inlets to Horn Pond (tributary through a small stream and Wedge Pond to Aberjona River, which flows through the Mystic lakes into Mystic River). Boston sheet.

WINTHROP POND.—Middlesex County; one-half mile south of Holliston; two small inflowing streams; outlet, a stream 1½ miles long flowing northward into Bogastow Brook (tributary to Charles River) at East Holliston; altitude, about 170 feet. Franklin sheet.

WITCH BROOK.—Middlesex County; rises in the swamp about 2½ miles southwest of Townsend Harbor; flows northeastward into Squannacook River (tributary through Nashua River to the Merrimack). Groton sheet.

Wolf Brook.—Middlesex County, Mass., Hillsboro County, N. H.; rises in Wolf Swamp on the northwest slope of Townsend Hill, at altitude about 350 feet; flows northeastward 3 miles into Nissitisset River (tributary through Nashua River to the Merrimack) in the town of Brookline, N. H. Groton sheet.

Wolf Plain Brook.—Bristol County; town of Rehoboth; a stream about 2 miles long flowing southeastward into Bliss Brook (tributary through Palmer River to Warren River and thus to Narragansett Bay) at Perryville Reservoir. Providence sheet.

Wood Pond.—Hampden County; a small pond 1 mile northeast of Ludlow and about a mile north of Chicopee River (tributary to the Connecticut). Palmer sheet.

Woods Brook.—Plymouth County; town of Middleboro; rises about 1 mile north of Woods Pond; flows southward through the pond into Fall Brook (tributary through Namasket River and Taunton River to Narragansett Bay); length, about 3 miles. Middleboro sheet.

Woods Pond.—Plymouth County; town of Middleboro; inlet and outlet, Woods Brook (tributary through Fall to Namasket River and thus through Taunton River to Narragansett Bay). Middleboro sheet.

Workman Brook.—Franklin County; rises 2 miles northeast of East Shelburne; flows southeastward 1 mile, then northeastward 1 mile into Green River (tributary through Deerfield River to the Connecticut). Greenfield sheet.

Worthington Brook.—Hampden County; town of Agawam; rises in the southeastern part of the township; flows southeasterly 1¼ miles, then northeasterly about a mile into Threemile Brook (tributary to Connecticut River). Springfield sheet.

Wrangling Brook.—Middlesex County; rises 1 mile northeast of West Groton; flows southeastward 1 mile, then northeastward 1 mile into Nashua River (tributary to the Merrimack). Groton sheet.

Wright Brook.—Berkshire County; rises between Mount Ethel and Mount Sterling, in the northeastern parts of the town of Mount Washington; flows southerly 1½ miles, then southwesterly 1 mile into Bashbish Brook (tributary through Rocliff Jansen Kill to the Hudson). Sheffield sheet.

Wright Brook.—Middlesex County; rises one-half mile south of Fox Hill and 1 mile east of Billerica, at altitude about 110 feet above sea level; flows southeastward 2 miles into Shawsheen River (tributary to the Merrimack) about 3 miles west of Wilmington Center; marshy through the lower part of its course. Lawrence sheet.

Wright Ponds.—Middlesex County; southern part of town of Ashby; two small ponds which are connected by a short stream and which discharge by a stream 2 miles long flowing southeast into Pearl Hill Brook (tributary through Squannacook River to Nashua River and thus to the Merrimack). Fitchburg sheet.

Wright River.—Hampshire County; town of Williamsburg; rises (as Potash Brook) on the south slope of Walnut Hill; flows somewhat east of south 2 miles, then southwesterly one-half mile into Mill River (tributary to the Connecticut). Northampton sheet.

Wyoma Lake.—Essex County; about a mile northwest of the city of Lynn; inlet, a small marshy stream flowing southeastward about a mile through two small ponds; outlet, a small stream to Wenuchus Lake and thus to a tributary of Saugus River. The tributary forms a part of the drainage system of the city of Lynn. Length of lake, about three-fourths mile; width about one-eighth mile; elevation 80 feet. Salem and Boston Harbor sheets.

Yokum Pond.—Berkshire County town of Becket; a mile east of Becket Mountain; outlet to a stream that enters West Branch of Westfield River (tributary through Westfield River to the Connecticut) at Becket. Becket sheet.

Yokun River.—Berkshire County; town of Lenox; rises between Lenox Mountain and Baldhead; flows northeastward 3 miles, then southeasterly about 3 miles to its junction with Housatonic River a mile south of New Lenox. Pittsfield and Becket sheets.

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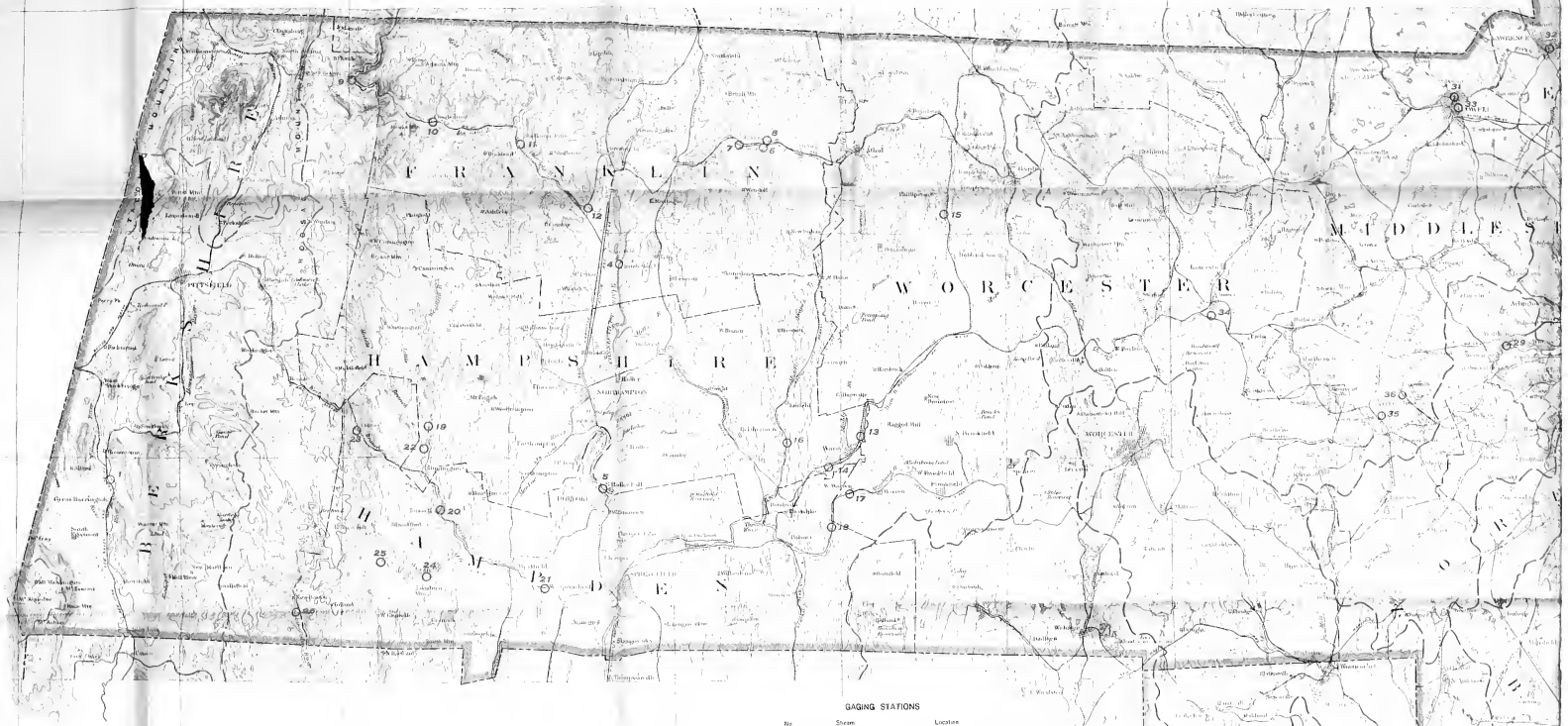


TOPOGRAPHIC MAP

OF

MASSACHUSETTS AND RHODE ISLAND

SHOWING PRINCIPAL DRAINAGE BASINS AND LOCATION OF GAGING STATIONS

COMPILED FROM U. S. GEOLOGICAL SURVEY ATLAS SHEETS
SURVEYED IN 1884—1888
IN COOPERATION WITH THE STATES OF MASSACHUSETTS AND RHODE ISLAND

SCALE 1:380,000

Contour Interval 100 feet.
Datum is Mean sea level.

1916

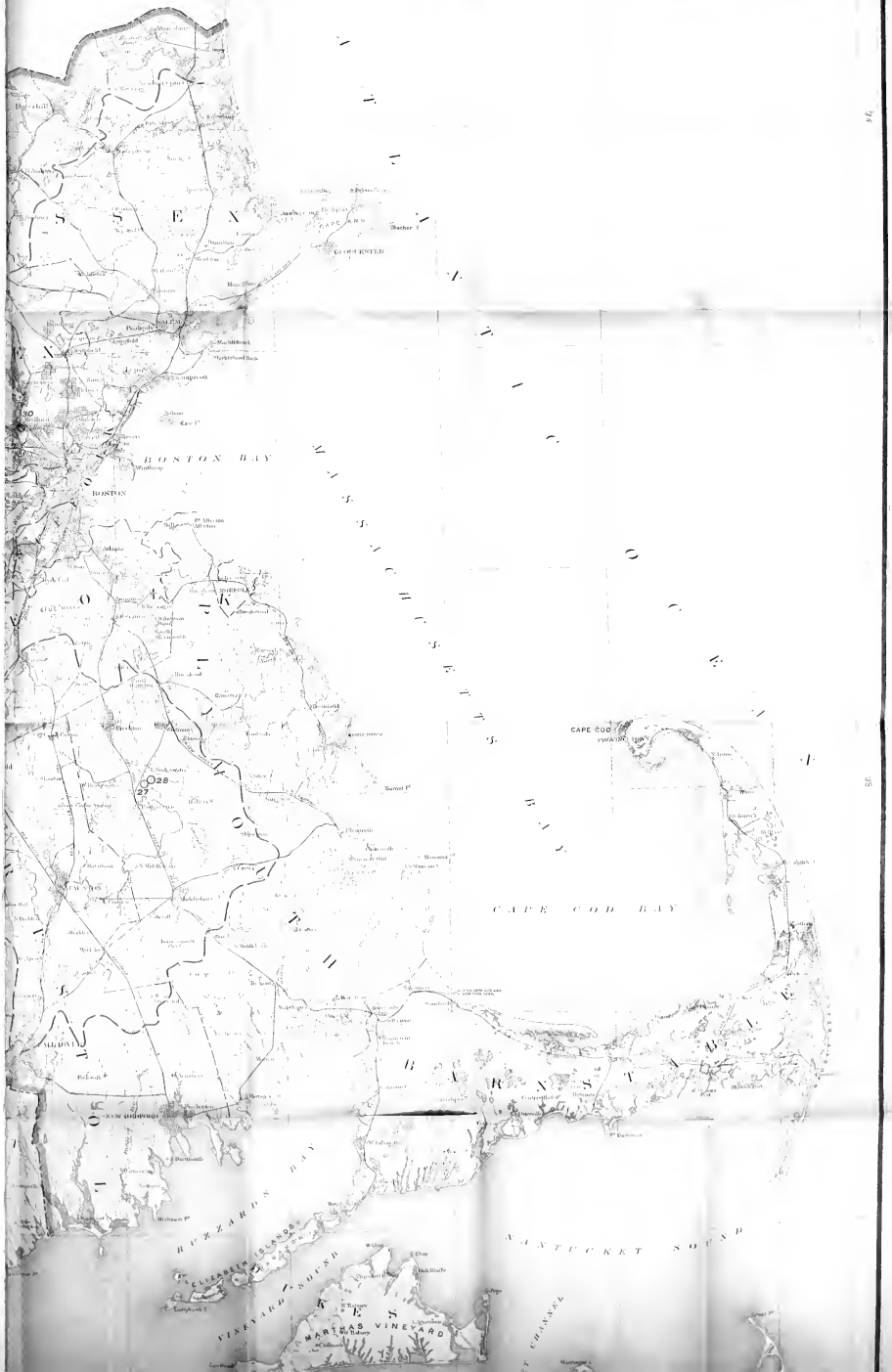
LEGEND

Gaging station (Number refer to those on list)

Boundaries of principal drainage basins

GAGING STATIONS

No	Stream	Location
1	Housatonic River	Great Barrington
—	Housatonic River	Falls Village, Conn
—	Connecticut River	Orford, N. H
4.	Connecticut River	Sunderland
5.	Connecticut River	Holyoke
6.	Millers River	Wendell
7.	Millers River	Erving
8.	Moss Brook	Wendell
9.	Deerfield River	Hoosac Tunnel
10.	Deerfield River	Charlemont
11.	Deerfield River	Shelburne Falls
12.	Deerfield River	Deerfield
13.	Ware River	Ware
14.	Ware River	Gibbs Crossing
15.	Burnshirt River	Templeton
16.	Swift River	West Ware
17.	Quaboag River	West Warren
18.	Quaboag River	West Brimfield
19.	Westfield River	Knightville
20	Westfield River	Russell
21.	Westfield River	Westfield
22.	Middle Branch of Westfield River	Goss Heights
23.	West Branch of Westfield River	Chester
24.	Westfield Little River	Westfield
25	Borden Brook	Westfield
26.	Farmington River	New Boston
27.	Mattfield River	Elmwood
28	Sebichet River	Elmwood
29.	Charles River	Waltham
30.	Mystic Lake	Medford
31	Merrimack River	Lowell
32	Merrimack River	Lawrence
33	Concord River	Lowell
34	South Branch of Nashua River	Clinton
35	Sudbury River	Framingham
36	Lake Cochituate	Cochituate


ESSEX
BOSTON BAY
BOSTON
CAPE COD BAY
BARNSTABLE
BUZZARDS BAY
NANTUCKET SOUND
MARTHAS VINEYARD
CAPE COD